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Original Communications.

TREATMENT OF CARDIAC ASTHENIA OF PNEUMONIA.

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The treatment of the so-called cardiac asthenia of pneumonia has been exceedingly discouraging to the profession. The sudden and overwhelming toxemia has often staggered the therapeutist because of his weakness to cope with it. A persistence in the methods of treatment which have become time-honored and routine has done much to rob the patient of the resistance which is absolutely needed to combat successfully a poison at once malignant and destructive.

To prevent the onset of circulatory embarrassment and to relieve this condition when present in acute pneumonia requires the breaking away from the empirical practices of the past and the acceptance, as indications for treatment, of the conditions which clinical and bacteriological experiences have made positive after faithful observation and experiment.

I fear that we have too long limited ourselves to the consideration of the heart alone when administering to our pneumonic patients, disregarding entirely the condition

of the peripheral vessels, particularly the arteries.

Riegel* long since demonstrated by sphygmographic tracings that most infections are associated with reduced arterial tension; Rosenbach† emphasizes the importance of the vasomotors in experimentally induced infectious endocarditis; and Buchard‡ at the Tenth International Congress dilated on the baneful influences of bacterial poisoning on the vasodilating centers. It remained, however, for Romberg§ to make a series of experiments and to associate these with clinical data. These have done much to place the treatment of the circulatory failure in pneumonia upon a scientific basis. In the *Berliner Klinische Wochenschrift* he reports a series of convincing experiments with the bacilli pyocyaneus and the pneumococci of Frankel, made for the purpose of determining the relative importance of the heart and the vasomotor system in the production of the circulatory failure in these infections. He concluded that the circulatory symptoms, which we have considered to be due entirely to heart weakness, are, in truth, intimately associated with demonstrable change in the vasomotors. A literal translation of his concluding sentence would read as follows: "We must consider with the heart weakness the weakness of the vasomotors, and with the cardiac paralysis that of the vasomotors also." Later, in 1896, before the Fourteenth Congress for Internal Medicine, and at the meeting of the German naturalists and physicians in Lubeck, Passler and Romberg‖ reported a series of experiments which serve to prove the relative importance in the production of the so-called heart weakness in pneumonia, of the heart itself, and of the vasomotor system.

Animals were inoculated with the pneumococci and the change in arterial tension carefully measured. To give the many experiments in detail would be tedious; but these were decisive. The experiments made with the pneumococci and the bacillus pyocyaneus, in which rabbits were inoculated, proved conclusively that the vasomotors were weakened and showed evidences of paralysis. These experiments were carried to a logical conclusion after many days of painstaking work, and as the result we are to day in a position to teach that the toxins exert their baneful influences upon the vasomotor centers in the cord.

These observers, in the report just mentioned, speak of the behavior of the heart as branding the infections experimentally produced. In pneumonia, for a time, the arterial tension is kept up to the necessary height by what they call an excited heart action. Infection with the pyocyaneus bacillus proved that the heart action was seriously retarded. Both these observers and all who worked with them, including Bruhns, agree that the circulatory disturbance found in the vasomotor system was due to the effect of the toxins on the vasomotor centers in the cord, and was of far greater import than was the condition of the heart.

In this country Van Santvoord* has done excellent work in this same field. Sphygmographic tracings were taken in eighteen cases of pneumonia, and these seemed to confirm the conclusions of the German observers. While the experiments to which I have thus fully referred establish the great importance of the vasomotor system, more particularly the vasomotor centers in the cord in pneumonic toxemia, the practical clinician will always, in formulating a rational treatment of the changed circulatory conditions, keep before his mental vision the association of an enfeebled heart with dilated peripheral vessels.

Primarily we are dealing with a toxemia. This leads to the cardiac asthenia, in which we are likely to have not only marked changes in the right half of the heart, but far-reaching degenerative changes in the muscle, heart clots, and vasomotor paralysis. To this must be added the obstruction in the pulmonary circuit. Fortunately the toxemia is short-lived, but its effect on heart and vessels is malignant, and when these suffer the treatment must be radical, prompt, and sustaining.

I must still further preface what I shall have to say on the subject of treatment by remonstrating with all my force against the indiscriminate use of such remedies as lower the vitality of these patients while they reduce temperature. All antipyretics, except

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*Riegel: *Volkmann's Klinische Vortrage*, Nos. 144-145, Über die Bedeutung der Pulsuntersuchung.

†Rosenbach: *Arch. für Exp. Path.*, Bd. ix.

‡ Buchard: Tenth International Congress, vol. i, p. 59.

§ Romberg: *Berl. Klin. Woch.*, Nos. 51-52, 1895.

‖ Passler and Romberg: *Berl. Klin. Woch.*, April 27, 1896, p. 382; Fourteenth Congress Internal Medicine.

*Van Santvoord: *New York Medical Journal*, 1898, lxviii, pp. 521-525.

cold, which suddenly depress temperature do so at the expense of vital force, and are apt to rob the patient of needed resistance, or they may cause fatal and sudden collapse. Give nothing which at any time in the course of the disease acts as a cardiac depressant. Let your treatment from the beginning be tonic.

I quite agree with Von Jaksch* when he says "the coal-tar antipyretics from antipyrin to lactophenin have their value, but not as antipyretics in the true sense, but as nervines." He says "these are indispensable." This latter statement the experience of the American physician contradicts absolutely. The indiscriminate use of nitroglycerin is a growing evil with the profession of this country. If we have in pneumonia lowered arterial tension from paralysis of the vasomotors, why give a drug which increases that condition? No one denies the paralyzing effect of this drug on the vasomotor system.

It has been demonstrated also that the vagus is paralyzed; thus inhibition is removed from the heart by large doses of the drug, and it is assumed still further by Brunton that the blood loses its power of absorbing and conveying oxygen. These are the conditions which we must seek to prevent.

The writer has frequently seen patients who have been treated with some one of the numerous cardiac tonic tablets which we now find in profusion on the market—all of them containing nitroglycerin with digitalis and a variety of other so-called heart tonics—develop the most alarming symptoms of cardiac and respiratory insufficiency, with rapidly lowering arterial tension, and to whom the firm believers in nitroglycerin have, with renewed energy, given increasing doses of the drug, only to aggravate the symptoms and produce paralysis.

Nitroglycerin may have its uses in overcoming peripheral obstruction where the arteries are tense, sclerotic, or narrowed, against which the heart is laboring. This condition occasionally presents with pneumonia in elderly subjects, and may be associated with interstitial nephritis. My experience with these cases has been very unfortunate. With slight change in arterial pressure reduced by the drug and a slow pulse I have been unable to control the heart; tachycardia finally followed, and the patients died.

But in pneumonia, where we already have paralysis of the vasomotors, it would seem from the experience of the past that nitroglycerin is a dangerous drug, in spite of the fact that one or two authorities of note have recommended it in this condition to relieve the overtaxed and dilated right heart; a condition which it would be far better to relieve by venesection, if all other methods fail, than by the use of a drug which causes still further paralysis.

I have looked into this subject very carefully and fail to find any authority founded upon physiologic experiment which justifies the use of nitroglycerin as it is to day used by many without an appreciation of one or more of the factors which underlie and aggravate the obstructed circulation.

Van Santvoord* in his paper pictures a series of convincing tracings taken from a patient during the acute stage of the disease, "one taken during convalescence, and one a few moments after the latter, when the circulation was under the influence of a very large dose of nitroglycerin." It is difficult to differentiate the first from the last, so similar are they.

A recent experience with a young physician would have been amusing had it not been pathetic at the same time. He had been taught to bleed his patients "into their own veins" by the use of veratrum viride. The patient was a man whom I had treated for myocardial degeneration, and who fell into the hands of the young practitioner suffering from acute pneumonia. I saw him on the seventh day. The physician expressed himself as anxious to have me see his patient, because he wished to be assured that his treatment was all that could be desired. For seven days this unfortunate victim had received one drop of the strong tincture every hour, and when I saw him *in extremis*, blue from carbonic acid poisoning, he was still receiving what the young doctor had been taught to consider his concealed lancet.

How many physicians have been misguided and how many lives have been lost from the persistent use of this cardiac depressant it would be difficult to compute. I never saw a case of pneumonia recover which had been rigorously treated with this drug.

The secret of success must be found in the use of such methods as will restore or sustain cardiac strength and arterial tone. There are two drugs which, when properly adminis-

*Von Jaksch: *Berl. Klin. Woch.*, 1896, p. 363.

* Van Santvoord: *loc. cit.*, p. 525.

tered, meet the indications presented by the circulatory changes of pneumonia due to paralysis of the vasomotor centers and the dilated condition of the arteries. These are strychnine and digitalis. This statement is not new to the profession, and I will occupy no time in emphasizing it.

I wish, however, to insist upon the administration of these drugs hypodermically. The results are more certain and more prompt. The strychnine may be administered in comparatively large doses while the patient is being watched by skilled attendants. Digitalin may take the place of digitalis. With the large doses of digitalis as recommended by Petresco* I have had no experience. How are we to treat the resulting cardiac insufficiency? By sustaining the heart and vessels without causing unnecessary wear or tear during these hours of imminent danger. To bring to your notice my method of accomplishing this end is the object of this paper.

The profession has long since learned the value of the diffusible stimulants. Unfortunately their effect is evanescent; hence my plan of treatment includes the administration of these at very short intervals during the continuance of cardiac asthenia. The stimulating effect must be continuous during the critical period. The remedy must be renewed before the preceding dose has lost its effect. In no other way can we accomplish the desired result.

During the past I have treated this condition by administering, every fifteen minutes, fifteen drops each of the compound spirits of ether, aromatic spirits of ammonia, the compound spirits of lavender, and the tincture of valerian. This is kept up day and night until the pulse shows improved tone and the heart action is decidedly better. The valerian is added because of its quieting effect when administered in these small doses with the diffusible stimulants. Occasionally we meet patients who have been unable to retain the mixture when it contained valerian, hence we have been forced to omit it and to substitute either pure whiskey or brandy in corresponding doses. If the Hoffman's anodyne is distasteful, it has been omitted and the dose of the ammonia and lavender has been doubled. The frequent administration of the compound has not seemed to annoy the patients, for, as a rule, they are not awake longer than is necessary to swallow the remedy. I have further insisted upon the internal administration every two, three, or four hours, according to the urgency of the symptoms, of .015 gramme (one-quarter grain) doses of sparteine sulphate with from .24 to .36 gramme (4 to 6 grains) of caffeine. Both of these drugs must be administered in larger doses than are usually prescribed if desirable results are to be obtained.

Finally, the alcoholic stimulant upon which I depend is Tokay wine. I know of no stimulant with which I have accomplished so much, and which in my hands has saved so many patients, as this Hungarian wine. This is administered in tablespoonful doses every half-hour, and is given with the ethereal stimulant when due. Occasionally it is necessary to use high rectal injections of coffee and whiskey and hypodermic injections of ether and oil during periods of collapse. The administration of the diffusible stimulants as above recommended, with the numerous other remedies suggested, perhaps appears to border upon polypharmacy. To this charge I plead guilty, but in extenuation would say that we are dealing with a condition of extreme danger, one which must be met by rigorous and continuous medication. The remedies are not antagonistic.

Because of these facts, we must be ready to supply the remedy anew before the heart and arteries have again lapsed into a condition which, if allowed to continue, will favor the formation of heart-clot, pulmonary edema, and carbonic acid poisoning.

In connection with this subject I hardly know what to say of the use of oxygen. In hospital and private practice we have learned to use it in a sort of routine fashion. Whether it is really productive of great good remains an unsettled question.

There is an unfortunate class of cases in which we find marked heart weakness very early, with pulmonary edema and a very profound congestion which seems to flood the lungs with a bloody serum. These patients often die during the first thirty-six hours in spite of any known treatment.

The treatment to which I have referred cannot be carried out without skilled and faithful nurses. My experience with this method has been satisfactory to me and gratifying to my colleagues on the hospital staff, as well as in consultation practice. Patients have been saved in whom the condition hardly appeared to justify the great labor of carrying out the treatment.

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* Petresco: *Therapeutische Monatshefte*, February, 1891.

*A REPORT OF TWO CASES OF LAPAROTOMY FOR PERFORATION IN TYPHOID FEVER.**

By William J. Taylor, M.D., Philadelphia,
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The subject of operative interference in cases of perforation of the bowel in typhoid fever is of such importance that I make no apology in bringing before you this evening the report of two laparotomies performed for this condition during the past few weeks, at St. Agnes' Hospital. Unfortunately, death occurred in both instances, but in view of the very fatal results in these cases if left to themselves, I feel that the attempt to benefit them was not only perfectly justifiable but imperatively demanded.

Laparotomies for intestinal perforation in typhoid fever have, of late, been very thoroughly discussed in Dr. Keen's work on "The Surgical Complications and Sequels of Typhoid Fever," by Finney in the *Annals of Surgery*, 1897, vol. xxv, p. 233, and by Cushing in the *Johns Hopkins Hospital Bulletin*, No. 92, for November, 1898; and I will, therefore, attempt little more than to give the histories of these two additional cases and a few conclusions that seem to me worth emphasizing. In all instances where perforation has occurred, the patients were already seriously ill from the disease, and we could, therefore, hardly expect a low mortality, especially where the additional element of an infective peritonitis is considered. Cushing states that in thirty autopsies held in fatal cases of typhoid fever at the Military Hospital at Fort McPherson, perforation was found to have caused death in six instances, one of these being of the appendix. This would attribute to perforation twenty per cent of all deaths, and as according to the latest German statistics (Gesselewitsch and Wanach, quoted by Cushing) ten per cent of the entire number of fatalities in typhoid fever are due to perforative peritonitis, its consequences need not be emphasized.

Cushing states that there were probably 2000 deaths from typhoid fever in the field hospitals and elsewhere during the late Spanish-American war, and if we accept these latest statistics as correct ten per cent, or about 200 of these deaths, were from perforation of the bowel and the resulting septic peritonitis. He stated he did not know of a single instance where operation for relief of the perforation was resorted to, but Dr. De Forest Willard at the December meeting of the Philadelphia Academy of Surgery reported a case of a soldier at the Presbyterian Hospital, upon whom he operated in October last. Dr. Nicholas Senn (Cushing) stated that although he saw hundreds of cases of typhoid fever during his military service, he was only called upon once to operate for perforation, and as the patient was moribund at the time, he refused to do so. Certainly very many of these cases should have been subjected to operation and an attempt made to save their lives. With Finney's statistics before us of fifty-two cases of perforation of the bowel in which operation was done with seventeen recoveries, or 32.68 per cent, and which on revision by eliminating all possible sources of error in diagnosis makes a total of forty-seven cases and thirteen recoveries, or 27.68 per cent, and Dr. Keen's table of eighty-three cases and sixteen recoveries, or 19.36 per cent, we should urge the necessity for operation, especially when the known mortality without operation is about ninety-five per cent. Many of the reported cases of perforation of the intestine in this disease which have recovered without operation are probably due to the occurrence of a perforative appendicitis in the course of the fever, for if there be a perforation of the appendix the ulcerative process may be slow, thus giving sufficient time for the walling off by adhesive lymph from the general peritoneal cavity and the formation of a circumscribed abscess, as we sometimes see in ordinary appendicitis.

In two instances which have come under my own observation, postcæcal abscesses formed and worked their way into the right flank, where they were opened and drained, the patients making ultimately good recoveries. In one of these cases the diagnosis of typhoid fever was unmistakable; the patient was under the care of Dr. H. A. Hare, and I had the good fortune to assist Dr. Keen in the operation. In the other case, a young girl at St. Agnes' Hospital, the diagnosis was probable but not positive.

General septic peritonitis has necessarily a high mortality, and it is only by a very early recognition of the occurrence of perforation and immediate operation that we have any chance of success. Cushing lays down the rule, which is certainly well worthy of consideration, that "any abdominal symptoms

*Read at a meeting of the College of Physicians, April 3, 1899.

occurring in the course of the fever are as urgent an indication for surgical consultation as is the appearance of pain and tenderness in the right iliac fossa under all occasions, and that only when this is fully realized will the mortality of these cases approach the low percentage reached in operations for acute perforative appendicitis or perforating gunshot wounds of the abdomen."

I believe, to be successful, the abdomen should be opened at the earliest possible moment after the diagnosis is made, and that no delay whatever should be permitted for reaction or, indeed, for any purpose whatever. In these cases which I report to-night the abdomen was opened within four hours in the first instance, and within two hours in the second, and in both instances a general septic peritonitis was present. The most important point in my estimation is that of diagnosis, and I hope very much to hear from the physicians present concerning it.

Can a diagnosis be made sufficiently early to warrant operation before a general septic peritonitis has developed—that is, in the preperforative stage?

Do recoveries ever take place after perforation of the bowel has occurred, without operation? Fitz remarks: "Since perforation of the intestine in typhoid fever may take place without any suggestive symptoms, and since suggestive, even so called characteristic, symptoms may occur without any perforation having taken place, it must be admitted that recovery from such symptoms is no satisfactory evidence of recovery from perforation."

The symptoms usually given as denoting perforation are sudden and severe abdominal pain, persisting with increasing intensity (in one of my own cases there was severe pain for a week, and in the other for several days, before the perforation occurred), with nausea and vomiting, and a sudden fall in temperature; but in one of Cushing's cases the temperature was 105° F. at the time of operation, and the pulse was 170. This patient complained of severe abdominal pain and general tenderness, somewhat more marked on the right side, was restless, with pinched expression, while his color was cyanotic, the lips blue, and his extremities blue and cold.

The absence of liver dulness is not a physical sign of special value. In my first case the liver dulness was absent, as there was great tympanites, but in my second case this dulness was present. Finney mentions this absence of dulness as being noted in only five out of thirty-five cases.

Marked rigidity of the abdominal wall, a board-like condition as it is frequently described, is certainly characteristic of serious intra-abdominal inflammation, and I consider it of great importance in aiding us to decide upon operative interference.

All of these symptoms are those of beginning septic peritonitis, and show a very alarming physical condition, with the depression consequent upon a violent bacterial poisoning. The possibility of a condition of preperforative stage of ulceration undoubtedly exists, with a localized area of inflammation of the serosa, either with or without the passage through the intestinal wall of microorganisms. This is exactly similar to the preperforative stage of appendicitis and is indeed more serious, as the ileum is freely movable and less likely to form adhesions to other tissues and the formation of a circumscribed abscess. In my second case there was a mass of lymph almost surrounding the perforation in the ileum and firmly attached to the serous coat of the bowel, evidently an attempt, but without success, to wall off the perforation. In one of Cushing's cases this preperforative stage was recognized and the operation done, with the satisfactory result of saving life. It may be that adhesions take place between the omentum and the bowel, as has at times been reported, but this is so theoretical that it cannot be considered as a practical possibility; although, as is shown in the specimen which Dr. Miller has brought here to-night, a perforation may occur and be closed by an omental adhesion. Fatal septic peritonitis may be present without perforation, as had been demonstrated in numerous cases, but we all know a septic peritonitis without operation and drainage is terribly fatal, and this possibility should urge us more strongly to operate in all cases where it is suspected.

Case I.—A man, aged thirty-four years, was admitted to St. Agnes' Hospital, March 3, 1899, suffering with typhoid fever. He had been sick for some time, and it was difficult to fix the exact date of the disease, but presumably it began about the 22d of February. He had been under the care of Dr. Stevens, and his condition had grown steadily worse, having had a hemorrhage of the bowel the day before; the pulse was poor and tympany increased. March 8, about the eighteenth day of the disease, between eleven and twelve, he had all the symptoms of perforation of the bowel, with vomiting, and a drop in temperature from 102⅘° F. to normal.

Dr. Stevens saw him shortly after twelve o'clock and advised that he be turned over to me for operation. I did not see him until three o'clock, and found him with a greatly distended belly, short respirations, pulse almost imperceptible, and finger-nails and lips rather blue. He had horrible pain, which was especially severe over the right side of the abdomen; his whole condition was one of profound poisoning. The only possible chance of saving his life being an abdominal section, I laid the matter before his mother and sisters, telling them I considered his chances for life without operation absolutely *nil*, while with operation there was a chance, but a very slim one, that he would recover, and that I considered it my duty to give him that one chance. They accepted the proposition and told me to use my own judgment. All preparations were made for a rapid laparotomy. Ether was then administered, and in the course of a few minutes, after some struggling, his respirations became easier and his pulse fuller in volume, so that it could readily be counted. As soon as he was narcotized I rapidly opened the abdomen, and typhoid feces spurted out at least twelve inches. I quickly enlarged the incisions, pulled out the small intestine, rapidly passing down to within about ten inches of the ileocæcal valve, when I found a perforation of the gut through an ulcer which would admit the end of an ordinary lead-pencil. All round this ulcer the tissues were thickened and congested, and his condition by this time was so threatening that the ulcer was simply invaginated and the peritoneal coating closed over it, with two layers of sutures of fine silk. The abdomen was then washed out with sterile salt solution, and some stitches of silkworm-gut introduced into the belly wall. Before, however, all these latter were in place, death occurred.

From the size of the opening in the gut and the mass of fecal matter in the belly, it does not seem possible that an earlier operation would have had any effect, unless it had been possible to have recognized the preperforative stage, and by operation have anticipated the violent septic peritonitis. The whole time occupied in the operation from the beginning of etherization until the completion of the operation was just twenty minutes, and it must have taken at least eight minutes, if not ten, in the etherization before the abdomen was opened.

Case II.—A man, aged forty-seven years, was admitted to St. Agnes' Hospital March 16, 1899, having been ill with typhoid fever ten days, and for several days he had had severe abdominal pain, but no hemorrhage. On March 28, the twenty-fourth day of the disease, at 11 45 at night, the nurse discovered that his temperature had suddenly fallen from considerably over 103° to below normal; he complained of an intense pain in his abdomen, had vomited, and his condition was poor, but there was little evidence of shock. The resident physician saw him within fifteen minutes and diagnosed a perforation of the bowel. I saw him about twenty minutes past one, an hour and a half having therefore elapsed since the time of perforation. His temperature was then normal, his respirations rapid, pulse very rapid but of fair volume. He had been delirious for days and his abdomen was tympanitic, but not very much distended; there was great pain on pressure, and even a slight touch would rouse him from his stupor and cause him to complain. Liver dulness was present. The abdominal muscles were absolutely board-like. From the sudden and rapid fall of temperature, the vomiting, the great pain, and the board-like condition of the abdominal wall, I felt sure that there was an intestinal perforation. He was therefore given ether, the abdomen was rapidly opened, and as soon as the incision was made into the peritoneum gas escaped, but no fecal matter, only a thin serous fluid. The intestines were very much distended and popped out of the wound; they were caught, drawn outside, and a rapid search of the small intestine made down in the direction of the cæcum, where a small perforation was plainly seen in the ileum, about eight inches from the cæcum. This opening was not larger than the head of a small pin, and gas escaped, but apparently no fecal matter. There was a marked general peritonitis and about the perforation there was evidence of the deposit of lymph. The whole peritoneal cavity was filled with colorless fluid, evidently the result of intense congestion. The small intestine was in very good condition. There was no pus, marked ulceration, or thickening, except about the point of perforation. The ulcer was invaginated, two rows of silk sutures rapidly placed in position, and the abdomen washed out with normal salt solution; drainage was introduced and the wound closed by through-and-through silkworm sutures. His condition throughout the operation was without change, his pulse remaining good and his respirations somewhat easier after the belly was opened. He passed a

very fair night, his temperature in the morning being 102°, the pulse fair, and on the whole his condition was not materially changed by the operation. Death occurred in twenty-one hours from septic peritonitis.

I believe that cases of typhoid with pronounced abdominal symptoms should be looked upon as nearing the preperforative stage, and more especially all cases in which hemorrhage of the bowel has been noted, for without ulceration the possibility of severe hemorrhage is difficult to understand. Osler states that death occurs in from thirty to fifty per cent of all cases of hemorrhage of the bowel. I should much prefer to open a few abdomens without finding true perforation of the bowel, if I could discover evidence of deep ulceration of the intestinal wall, as it would give an opportunity for reenforcing the weakened wall of the gut by proper suturing, and providing free drainage for commencing general peritonitis.

The danger from operation in these cases is undoubtedly great, and when the shock is very profound may sometimes hasten by a few hours the fatal issue; but I do not believe it wise to wait for reaction, as Dr. Keen suggests, for the shock and lowered temperature is due to the large amount of septic material in the abdominal cavity and to the resultant purulent peritonitis, and not to the shock of the perforation of the bowel. The fact that the greatest number of recoveries occurred (see Dr. Keen's tables) when the operations have been performed within the second twelve hours only carries out this contention; they are, as a rule, the cases where the perforation is small and the onset of the peritonitis slow. Our chances of success are in inverse ratio to the size of the opening in the gut, for the smaller the perforation the slower the extravasation of the contents of the bowel, and, necessarily, the milder the type of infection and degree of shock; while on the other hand, the greater the fall of temperature, the greater the degree of shock and general constitutional depression, the larger the opening, and the more overwhelming the septic infection. In these latter cases I fear our results will always be most disappointing, and it is only by an endeavor to anticipate, to form our diagnosis in the preperforative stage, and to operate early, that we can hope for success.

There are very few of us who would wait for reaction before operating upon a case of acute perforative appendicitis with general septic peritonitis, for if we wait for reaction our patients will have passed beyond the point when they can be benefited; and, indeed, many surgeons now decline to operate at all in these cases. I admit the prognosis in all cases of septic peritonitis is very bad, but I have seen some few patients absolutely snatched from the grave by freely opening the abdomen and draining its septic contents.

Typhoid patients have a wonderful amount of vitality and stand operative interference and many surgical complications remarkably well, providing you can eliminate the overwhelming depression of a septic peritonitis.

I believe that in careful and repeated examinations of the blood in all cases of typhoid fever with severe abdominal symptoms, and indeed, if it be possible, in all cases of the disease, we will find a very valuable aid in arriving at a correct diagnosis, and it will enable us frequently to operate much earlier than we otherwise would possibly feel justified in doing. Cabot (Clinical Examination of the Blood) and Thayer (Johns Hopkins Hospital Reports, vol. iv, No. 1, p. 83) have demonstrated that during the fever there is a tendency for the number of white corpuscles to diminish, and with the onset of any acute inflammatory process the number of white corpuscles is largely and suddenly increased.

Cushing has shown in two of his cases that there may even be a diminution in the number of leucocytes in the blood after the onset of peritonitis, when there is a large outpouring of leucocytes into the abdominal cavity; and, at first, this might seem to destroy this means as an aid to diagnosis. If, however, the blood be carefully examined and a marked and sudden leucocytosis demonstrated, corresponding to the increase in abdominal pain, and which again abruptly diminishes, we should at least suspect perforative and septic peritonitis.

I would here quote Finney's conclusions as thoroughly expressing my own belief: First, of all the so-called diagnostic signs of perforating typhoid ulcer, most reliance is to be placed upon the development of an attack of severe, continued abdominal pain, coupled with nausea and vomiting, and at the same time a marked increase in the number of white blood-corpuscles; secondly, the surgical is the only rational treatment of perforating typhoid ulcer; thirdly, there is no contraindication to the operation, surgically speaking, save a moribund condition of the patient.

I would therefore urge most strongly that all cases of even suspected perforation with great abdominal pain, if accompanied by a

marked increase in the number of white blood-corpuscles, be subjected to an abdominal section, that a rapid search be made for a perforation in the last two feet of the ileum, the appendix inspected, as well as the cæcum, and if no opening is discovered, an examination made of the sigmoid flexure of the colon. Any especially inflamed spots should be covered in by stitching the sound serous coating over them.

Cushing has shown how necessary this is in the report of his case, where the abdomen was opened three times, first for perforation, secondly for strangulation by a band of adhesions, and thirdly for a second perforation of the bowel and fecal extravasation.

Unquestionably a number of cases will be operated upon, if this plan is pursued, without any perforation being discovered, but if drainage be practiced we will of necessity save many lives which would otherwise be sacrificed.

The vast majority of cases of suspected perforation submitted to operation where no opening in the gut has been found have recovered promptly from the surgical interference, and in some instances at least with apparent beneficial effect upon the course of the disease.

Welch, of Johns Hopkins, has shown that it is quite possible for microorganisms to pass under certain conditions through the inflamed wall of the gut without there being any true perforation, and bearing this in mind, we should always drain the abdomen.

I shall not go into the question of the technique of the operation, for with this we are all familiar in our work on the appendix, but to insist upon the necessity for the utmost speed consistent with thorough work. The incision should be made to the right of the median line, as by far the greatest number of perforations are found in the lower end of the ileum, and, if there be need, a second opening made on the other side of the abdomen, if free drainage cannot otherwise be secured.

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*THE EVOLUTION OF MODERN THERAPY.**

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What is the status of therapeutics to-day? How does it compare with that of the past? What lessons may we gather from the contemplation of its history; what deductions for our individual and collective betterment, from a retrospective analysis of the therapeutic aims of our predecessors?

As brothers let us consider this vital subject in our family circle. I propose to offer you a brief outline of the therapy of the past in order to show that despite the emancipation of medical men from the iron rule of leaders of schools and systems, we are still far from the golden truth in therapeutics. How may a better therapy be evolved?

In the days of Hippocrates, Galen, and their successors, these great leaders attempted to guide the physician through the mazes of doubt and mysticism, their own intellects darkened by ignorance of anatomy and physiology — the blind indeed leading the blind! Is it surprising that they groped amid the problems of life, disease, and death without reaching their solution, when we, whose paths are illumined by the brilliant discoveries of a Harvey, a Claude Bernard, a Bichat, a Darwin, a Huxley, a Virchow, a Pasteur, and their followers and colaborers, are still so far from the key to the cure of disease?

"Life is short, art is long, opportunity fleeting, experiment dangerous, judgment difficult," has been well said by that grandest of medical intellects, the father of medicine. Read his works to-day and you will find that despite the dense pall of ignorance which oppressed and often misguided him, he divined the true aim of therapeutics. I propose to show you that modern therapeutics only attains perfection when it approaches most nearly to the teachings of Hippocrates. True, the golden grain of rationalism was buried deep amid the fallacies and traditions of his day, and obscured by crude conceptions of the structure and functions of the human organism. But if he had done nothing more than discover that pithily expressed attribute of the diseased human organism, "*vis medicatrix naturæ*," his name would deserve to be immortalized, for these three words are the still small voice which has brought his empiricism- and ignorance-sodden followers, in all epochs of medical history down to the present time, back to the true aim of healing. Although he regarded venesection as necessary, Hippocrates warned against excesses, because he deemed it a highly debilitating measure to be applied with the greatest caution, and one which should be almost forbidden in weak per-

*Address before the Society of the Alumni of the Medical College of Virginia.

sons, children, old people, and pregnant women. With therapeutic intuition he regarded inflammation and fever as manifestations of the conservative tendencies of the organism against which so heroic a measure was likely to react unfavorably. Although he bled freely in inflammatory conditions, he constantly cautioned the wisest care and attention to the condition of the patient's strength and vitality, his aim being "to relieve pain, moderate perturbed febrile movement, and promote crisis." For this reason he preferred local bloodletting. His plan of treating disease was cautiously watchful of the indications of nature (φυσις), by which he meant the organism. In his work on epidemics he writes: "We must do nothing foolishly bold, but be quiet and wait; if one does not help the sick, one at least does them no harm." In fevers he advised an abstemious diet, barley water, as a drink water and honey. Of medicines he used emetics, laxatives, and revulsives; radix hellebori, asses' milk, and juice of euphorbium. All his writings display an acuteness of perception which makes his observations valuable. The noble spirit which he sought to inculcate is evidenced by the Hippocratic oath, which commands the physician to live virtuously and piously and to preserve his art.

The enormous proportions which bloodletting assumed among many succeeding generations of physicians testify not only to the dominance of this remedial agent, but its rise and fall illustrate the varying conceptions of the aim of therapeutics which held sway at various times. I can therefore offer you no more striking illustration of these therapeutic conceptions than by briefly tracing the fate of this chiefest of so-called curative agents throughout medical history. The death of Hippocrates (366 years B. C.) resulted in more or less desuetude of his philosophical and rational teachings. Professing adherence to and extolling the latter, his scholars and their followers gradually swerved from the lines of strict bedside observation and deduction, which he had inculcated as the first duty of the physician. They attempted to construct systems of medicine by substituting their own speculations for the more simple methods of the Nestor, and thus they fell into false practices. There were a few exceptions among these impracticable men, who urged bloodletting and purgation in all diseases. Chrisippus and his pupil Erisistratus held boldly to the master's teachings and insisted that spoliative methods were contrary to nature. Indeed, few physicians at the present day excel Erisistratus in the wise ordering of abstention, baths, enemata, and other harmless therapeutic measures. Phillipus of Cos and Serapion (260 B.C.) formed the empirical school, based upon the pure Hippocratic doctrines. They cast aside all dogma and hypothesis, and depended solely upon bedside observation. They were extremely cautious with venesection, and regarded plethora and retained excretions as the principal etiological factors. They depended chiefly upon enemata and laxatives, and resorted to bleeding only when these failed, avoiding it always in chronic cases.

When the exponents of this sensible practice passed away, their pretended followers deviated from their teachings and lapsed into the most crude empiricism. Medicine was rescued from the latter by Asclepiades,* who adopted as a motto of treatment *tuto cito et jucunde*, depending chiefly on diet, rubbing, exercise, rest, and bathing. By reason of his great popularity in Rome his propaganda for bathing in health and disease obtained enormous success.

Galen is a familiar name. Being a man of culture and possessing great oratorical powers, he so skilfully constructed a system of medicine by a conglomeration of all former doctrines and practices that it endured for thirteen centuries. His fantastic ideas of the residence of the cardinal powers of life in the heart, the brain, and liver, and his doctrine of the four temperaments based upon the predominance of mucus, blood, yellow and black bile, stamp him as an idealist. Still he insisted upon the Hippocratic doctrines, and by his remarkable cures he acquired enormous repute, which is evidenced by his becoming physician to the Emperor Marcus Aurelius. He advised bloodletting as the surest remedy in plethora, in chronic ailments due to suppressed hemorrhages, and as a prophylactic, but he warned against bleeding to syncope. Although he was an active bleeder, he cautioned against excessive depletion, urging that "loss of blood may become harmful, because the vital spirit flows

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*This truly great physician and philosopher was the bosom friend of Cicero and a pupil of Democritus, who really foreshadowed the "cellular theory" by teaching contrary to the prevalent humoral theory, that "not the juices of the body but its elements and atoms are active in promoting health, and that their disturbance constituted disease." The intellectual preeminence of Asclepiades is attested by Pliny.

away with it and large losses must impair all the natural processes."

The first centuries of the Christian era, when science and art lay prostrate, constitute the darkest period of the history of medicine. Amid the darkness, and the excesses committed by the monks and others who arrogated to themselves the title physician, a few true medical spirits shone like gleams of promise.

Alexander of Tralles, living in the sixth century, though a follower of Galen, was courageous enough to oppose him by insisting that the physician should not follow any system of treatment, but that he should be guided in each case by the age, constitution, natural powers, and mode of life of the patient. Despite these sound views, bleeding was his chief remedy, though he cautioned against the excesses which he daily witnessed among the motley practitioners of his day.

The fifteenth century produced that erratic but clever reformer, Paracelsus, of whom the historian Ranke has said: "In him lived a spirit ingenious, profound, and endowed with rare knowledge." Although his vanity and bad habits made many enemies, and his alchemistic doctrines betray the spirit of ignorance which was the prevailing characteristic of his time, he displays true medical intuition in the earnestness with which he inveighed against Galen's doctrines and spoliative practices, and in his recognition of the authority of Hippocrates. He wrote: "When disease attacks the body, all the healthy organs must combat it, for disease tends to kill them all. Nature recognizes this fact, and therefore she attacks it with all her might." What Hippocrates called "*vis medicatrix naturæ*" Paracelsus termed "the inner alchemist." He proclaimed boldly: "Nature is the physician, not you! Since I saw that the doctrines of the ancients have accomplished nothing but the making of corpses, death, deformity, and decay, I was compelled to pursue the truth by another way." Whatever the failings of this man, be he charlatan or wiseacre, these ideas betray a realization of the aims of the true physician as we regard them to-day.

The same century produced Brissot, who with great learning and logical acumen inculcated that inflammation does not always demand venesection, because "the powers of nature, which always aid the diseased organism, may produce salutary congestion." He opposed general bleeding and preferred, like Hippocrates, local depletion. It is a sad commentary on the spirit of the medical profession of that day, and exemplifies the enormous prejudice in favor of bleeding, to record the fact that poor Brissot was not long permitted to sing the praises of "*vis medicatrix*." He was driven from Paris to Portugal, where he died a martyr to his excellent doctrines, amid the curses and maledictions of his *confrères*.

In every country bleeding, purging, and other spoliation continued the weapons with which disease was attacked.

A reformer appeared in the seventeenth century. Van Helmont sought to end the sad reign of spoliative therapy which had resulted from the perversion of the doctrines of Hippocrates during the dark ages. Despite his fantastic and mystical tendencies and practices, he was a brilliant physician, which is evidenced by the fact that even in that early time he laid special stress upon the fallacy of treating symptoms. "Diseases have no roots," he wrote; "their termination is based upon the removal of their causes; the aim of treatment should not be the *cooling of temperature* and removing the changable symptoms; the physician who directs his chief attention to these things and not to the removal of the cause, loses time, labor, and opportunity." He prescribed opium as a stimulant, and mercury, antimony, and wine in fevers. Against depletion he strove with might and main: "I estimate that indication most highly which is based upon the maintenance of the strength; venesection is directly opposed to the latter; the entire treatment should be for the maintenance of these powers. In fevers the indication for bleeding is absent. It is forbidden that he injure Nature, who should hasten to her aid when she tries to help herself. She can do this more perfectly the more vigorous she is. The physician should certainly know that without his interference the patient is debilitated enough by the disease, the loss of appetite, restlessness, pain, fear, wakefulness, and perspiration. By the rapid withdrawal of blood Nature is hindered in the destruction of her enemy. It is an insane practice to draw blood so frequently and at the same time offer the patient nourishment, regardless of the complete abeyance of his digestive powers."

To us of this enlightened era these views have the true ring; how singularly perverse was the medical mind in refusing to accept these salutary lessons! How steeped the medical profession was in its errors, and how

authority ridden, is sadly evident from the fact that Harvey, the discoverer of the circulation of the blood, was so persecuted by reason of his teachings that he lost his large practice in London, and his work, being refused censorship in England, was printed in Frankfort several years later (1628). In Paris his book was also prohibited.

It required a bold spirit indeed to antagonize the prevailing doctrines and the hapless therapy based upon them.

Now appeared upon the scene the famous Sylvius (1660), who taught Van Helmont's method in the University of Leyden. He added certain chemical doctrines which seem extremely absurd at the present time. He spared the patient's vitality by refraining from depletion, his chief remedies being simple diluents. His influence was good, but it did not seriously check the bloodthirsty doctrines. The discovery of the circulation of the blood even did not bring order out of the then prevailing therapeutic chaos. The circulation was regarded as a hydraulic process, and diseases were thought to be due to a despoiling of the blood, which could be remedied by bleeding and even by injecting medicinal agents or animal blood. The holocaust to venesection continued to accumulate, and the voices of the few great reformers were silenced amid the detractions of a multitude of despoilers.

In the latter part of the seventeenth century a brilliant star arose in the medical firmament. Thomas Sydenham strove to reinstate the lost doctrines of Hippocrates and relegate Nature to her merited position as a healer. A rational empiricism, a treatment free from speculation and based entirely upon observed facts, was his aim. Sydenham defined disease as "an effort of Nature to preserve the patient; this effort is manifested either by a purifying fever, the symptoms of which are the signs of Nature's battle, or by intestinal evacuation, sweating, or cutaneous eruptions. If Nature conquers the disease becomes acute; if not it becomes chronic." Although Sydenham, like Hippocrates, believed that it is the physician's duty to watch closely the processes of Nature in the furtherance of cure, he erred, like the great Nestor, in regarding high fever as an abnormal action, which must be modified by antiphlogistics, bleeding, purges, watery diet, and cool surroundings. He was a determined yet wary bleeder, always cautioning against excesses and deploring the therapeutic barrenness which forced him to resort to venesection, a remedy which he regarded as debilitating and destructive to the whole body. He said that "a regular system of management frequently cures many diseases better than the powder of the apothecary." He valued cinchona and opium highly. As a pupil of Locke and a student of the Montpelier school, which had served to maintain the rationalism of Hippocrates amid the chaotic confusion into which it had degenerated, he was a strict observer and insisted upon definite indications for all treatment.

Another evidence of returning good therapeutic sense is furnished by the life and teachings of one Gideon Harvey, a contemporary of Sydenham, who was physician to King Charles II. and William III., and city physician of London. He wrote a book in 1689 on "The Art of Curing Disease by Expectation," in which he violently assailed the prevailing spoliative methods. He may be regarded as the father of the expectant treatment, which came into vogue in the latter half of this century.

The enlargement of knowledge resulting from Harvey's great discovery and Sydenham's philosophic and yet practical teachings appear to have influenced therapeutics very little. We find in the writings of Pechlin (1700), who was a very conservative practitioner, the statement that spoliative methods continued in vogue in Europe and that especially in France bloodletting became a veritable fashion, against which the scathing satire of Moliere was as impotent as the eloquent warnings of the few rational physicians.

Even Boerhaave, who was justly regarded as the most celebrated physician in Europe, labored under the terrific error of spoliative therapy. Despite the fact that he recognized and warned against the devitalizing effect of depletion, he not only bled in most diseases, but recommended venesection to facilitate the absorption of medicines. He had a large following in all parts of the world. He wrote: "If we compare the good which half a dozen sons of Æsculapius have accomplished since the origin of the medical art upon the earth, with the evil which the immense mass of doctors have done among the human race, there can be no doubt that it would have been far better if there had never been a physician in the world." This sentiment, which was afterward wittily reiterated by our own Oliver Wendell Holmes, certainly reflects much truth, so far as internal medicine is concerned. The forlorn plight of therapeutics, its sad consequences for suffering humanity, cannot be depicted more eloquently

than by this statement of the foremost physician of Europe, who was himself so enamored of the spoliative practice which he condemns that he was utterly unconscious of his own participation in it.

After figuratively wading through tales of blood-spilling, the diligent student of medical history is refreshed by the clear and rational teachings of Friedrich Hoffman, in "*De naturæ et artis efficacia in medendo.*" Inveighing against the habit of being bled, because "in the blood is contained the entire stock of vitality," he recommends a simple therapy, consisting of bland diet, cool drinks, and baths, mineral waters, milk, wine, lead, camphor, iron; and opposes the use of opium and other poisons.

A staunch defender of Nature among the multitude of bleeders was Gaub, professor at Heidelberg, who wrote the first book on pathology. He regarded Nature amply competent to remove disease, which he considered quite as natural as life or death.

Stahl is another great man who left a favorable impress upon therapy. He wrote: "Nature, the physician of diseases, offers a better prospect of curing them than the most perfect apparatus of our art." He warned against too active medication and depletion, "which suppress the completely misunderstood efforts of Nature."

In France an outspoken opponent to depletion was Borden, who dubbed the Charité "the leech bureau." He lived in the latter half of the eighteenth century in Paris, when venesection was running riot. He disregarded plethora and valiantly defended Nature. Although he used the lancet, he warned against it in fever because "bleeding shatters the constitution and disturbs the function at a time when the organism requires all its vitality for the purpose of removing the disease." "Many a broken-down constitution," he writes, "is dragging itself around burthened with chronic disease as a result of disturbance and hindrance of Nature's work by bloodletting in acute diseases. In rheumatic and catarrhal diseases especially Nature is the sole curative factor."

While a reaction against depleting methods was brought about in France by the teachings of Borden, Castellot, and others, and by the conservative doctrines emanating from the great Montpelier school, the teachings and practice of Sydenham continued to be perverted by English physicians. Unfortunately many of them disregarded his warnings and blindly bled for all diseases.

The philosophic Cullen was an active bleeder, although, like Hippocrates, he warned against excesses; he laid down indications for drawing blood and prescribed tonics, stimulants, cinchona, wine, and opium.

Depletion still continued to sway the medical mind, however, until De Haen appeared in the latter part of the eighteenth century. A true exemplar of rational medicine, he taught that "Nature must not be disturbed by powerful medicines." He prescribed chiefly absolute diet, cooling drinks, and mild cathartics. De Haen is the founder of the Vienna school of medicine, which was destined with interruptions to endure to the present day. His beneficent teachings struck the first decided and lasting blow to spoliative methods, and gave birth to greater trust in the vital restorative powers than had ever before been embraced by medical men. Some of his immediate successors, like Stoll and Peter Frank, neglected his teaching, while his later offspring, Skoda, exaggerated it into a therapeutic nihilism. Gottlieb Vogel and Peter Frank, men of great renown, bled without stint, but warned the students against syncope, and taught that the organism should be allowed to retain sufficient vitality, so that "we may not murder with the cupping-glass those whom the disease had spared."

As an evidence that Vienna was still the center of spoliative therapeutics in the latter part of the seventeenth century, let me cite Wollstein, formerly a most zealous bleeder, who seeing the error of his ways, became a violent propogandist against venesection. He candidly admitted having nearly killed himself with it and having since his youth spilled thousands of pounds of blood. He writes: "I now look back with horror upon the twenty years of my bloody activity, by which health, animal nature, vitality, and its best weapon against disease — fever — were destroyed, a practice into which I had been decoyed by teachers and books. . . . . I know from my own experience no case in which bleeding deserves the name of a curative agent. Even in these troubles it helps only man; cattle and horses suffering in the same manner are not relieved by it. We should, we must, tremble in the application of an agent which makes weaklings of strong men and animals." Wollstein pointed out as no one before him, and until recently few succeeding him, have done, that the physician should not be deceived by occasional brief improvement of symptoms after venesection; he pleads for due regard of its evil after-

effects. "If the patient survives it, destruction of body and mind are the sad consequences which the doctor will observe after a cure by the cupping-glass." The courage of his convictions aroused this simple doctor to a valiant battle with prejudices and practices which were universal. His voice, however, was too feeble to stem the tide of blood surging around him. Antagonists arose on every side and counteracted his warning.

In the last years of the eighteenth century the medical philosopher Gall exercised a favorable influence upon his contemporaries. Recognizing the natural conservative activity of the organism, he endeavored to restore that simplicity in therapeutics which had been so long lost in practice, and to show the fallacy of the view that because Nature sometimes attempted to relieve by spontaneous bleeding from the nose, hemorrhoids, etc., diseases may be prevented or cured by removing a great deal of blood. Like Hippocrates, Gall regarded bloodletting as a devitalizing agent, which never weakened the disease, and only acted as a palliative by freeing the natural powers when plethora existed. He inveighed against these one-sided methods in acute diseases, which "by rough and forcible interference lowered the system," and warned earnestly against "those extravagant losses of blood which produce relapses and enfeeblement if they do not destroy life."

That the medical profession remained callous to the admonitions of these wise physicians is a deplorable fact, evident from the writings of that day.*

The close of the eighteenth century witnessed little abatement of spoliative therapeutics. With regard to medicinal agents it may be of interest to recall the fact that while in its earlier years many absurd remedies, like mummy, wood lice, dung, were regarded as efficacious, many medicinal agents were added which are of great value. Cinchona and opium were firmly established, despite violent opposition. Dover's powder was introduced; conium, stramonium, hyoscyamus, colchicum, were investigated by Stoerck, digitalis by Withering and Darwin, potassic solutions of arsenic by Fowler, acetate of lead by Goulard, corrosive sublimate by Van Swieten; oxygen was introduced for inhalation and mineral springs were studied; the external and internal use of water was introduced by Floyer in England, and by Friedrich Hoffman in Germany. The latter recommended cold baths "to restore elasticity to the solid parts." Hahn in Germany and Currie in England introduced the modern bath treatment of fever. Electricity was also introduced as a remedial agent.

The therapeutic attitude of the better class of medical men at the dawn of the nineteenth century is evident from the writings of Reil, who had distinguished himself by advocating the abolition of the medieval maltreatment of the insane: "Bloodletting is a very effective remedy, which alone is capable of saving life in some fevers and of paving the way in others. The untimely use of venesection is injurious; simple benign fevers do not require it, only the severe grades. Nature, not bleeding, removes fever. In inflammatory pneumonia a single bleeding restores expectoration, while excessive bleeding reduces the tone so that expectoration is absent and we are compelled to resort to senega, sulphur, etc. A bottle of porter often saves a patient who would have been killed by bleeding. Excessive and untimely bloodletting disturbs resolution, retards the crisis, slows convalescence, and sometimes produces effusions of lymph into the chest, with dropsy, suffocation, and apoplexy."

*A graphic picture of the practice at that time is furnished by Metzler, who "as the son of a country surgeon often saw in one day several hundred persons assemble for bloodletting, during the Easter holidays. Without any idea of medicine I was astounded by the indifference with which entirely healthy people, as well as those weakened by age or disease, allowed one or two pounds of blood to be taken, how one after the other dragged himself away faint and trying to refresh themselves by cold sprinkling of their faces, how they often made sport of persons lying in deathlike faints, and then seated themselves and allowed their blood to flow until they too grew weak and pale, often vomiting and sinking down exhausted. This silly action of the country folk astonished me, and this fearful effect of bleeding made a deep impression on my youthful mind. The correct ideas which I formed by reflection upon them were dissipated by the teachings of my professors at the medical schools. Fortunately I soon became convinced of the narrowness of the latter, how little I learned from them, and how much I still lacked in medical knowledge. I therefore studied the ancients, threw aside the laboriously learned school knowledge, and endeavored to gather all the Hippocratic teachings as my guide. Thus I became a physician; thus I obtained my conceptions of bloodletting and found myself more content at the bedside." He relates how his practice diminished because he refused to bleed pregnant women, drunken priests, and hypochondriacal politicians. He was dismissed from the practice of one convent because he advised exercise, abstinence from priestly labors and gormandizing instead of bleeding. "I only bled when it was in accord with my principles, and I have never had cause to regret this practice. I have published my views from time to time; they have been read from Slavonia to Paris. I have written of the beneficence of fever and against the thoughtless use of bleeding, and all those remedies which practitioners so constantly ply like a trade for the calming and suppression of febrile movements, which are so often useful."

Readers of medical history are familiar with the Bruonian System, promulgated by the brilliant Thomas Brown. His stimulating practice is said to have "slaughtered more human beings than the French Revolution and the wars of Napoleon." This extravagant charge is probably the anathema of his depleting contemporaries, proclaimed upon his revolutionary doctrines.*

In America the depleting practice was advocated by the well known Benjamin Rush. He recognized but two types of remedies, stimulants and depressants. He called calomel the Samson of the materia medica; his opponents contended that he was right, since it had undoubtedly slain its thousands (Roswell Park). In his treatise ("Upon the Advantages which Bloodletting Offers in Many Important Diseases") Rush proves himself a valiant and ardent defender of venesection, recommending it even in infants six weeks old and in the aged. The teachings of Rush dominated American medicine for many years, practically without opposition.

Throughout the entire world the battle between the depleting and conservative practice went on, the former always represented by the great mass of physicians, the latter espoused by a few isolated spirits who displayed laudable courage in thus opposing the popular destructive treatment of disease. Among the latter was at this time Ernst Horn, who wrote (1803) that "the waste of blood should be punished just like every poisoning; indeed, physicians who permit themselves to be deceived into bleeding by real or imaginary fulness of the pulse by increase of heat, stupor, delirium, etc., should be deprived of practice."

How the same fallacious theory may form the basis of opposite modes of practice is illustrated by that interesting but fatal method of treatment of the Italian teacher, Rasori, who had become a warm advocate of the Bruonian stimulant and contrastimulant theory. He differed from Brown materially in that he regarded the latter as far more frequently indicated than the former. In an epidemic of typhus at Genoa Brown's stimulating treatment was so destructive that Rasori afterward resorted to depleting measures in most cases. He not only used venesection freely in so-called sthenic cases, but he also applied it as a diagnostic feeler to ascertain whether to stimulate or depress. As if the hapless victims of this celebrated doctor were not yet miserable enough, he plied them with enormous doses of tartar emetic in pneumonia, which at that time prevailed extensively in Europe. A case of anasarca reported from the Genoa clinic received within fifteen days six venesections, of eighteen to twenty ounces, and forty-six ounces of saltpeter; a patient with pneumonia lost in eight days fifteen pounds of blood and received 220 grains of digitalis, after which he promptly died. Another case of elephantiasis received besides abundant venesection twenty-eight drachms of extract of aconite in gradually increasing doses.

It is a sad commentary upon the status of medicine in the early years of the present century to know that this destructive practice found a large following among European physicians, who modified it more or less. Disease continued to be attacked as an enemy hidden within the human body; the battle went on regardless of the injuries inflicted by the attacking forces.

Unhappily a brilliant clinician appeared at this juncture, whose contempt for the doctrine of Hippocrates acted as a blight upon rational therapy. Broussais, rhetorician, writer, theorist, sought to establish the so-called physiological school of medicine, a term as inappropriate as was his practice. He claimed that numerous post-mortem examinations showed that most diseases are due to local inflammation, chiefly of the gastrointestinal tract. In the effort to meet these, leeches were applied to a ludicrous extent. It has been stated that 400 leeches were used daily in each ward of the Hôtel Dieu, and that the Parisian hospitals consumed six million leeches annually.

You are doubtless familiar with the history of this remarkable practice, which must have cost many lives, because the influence of Broussais and his brilliant pupil Bouilland among the Latins was far-reaching.

Again a courageous dissenter appeared in the person of Andin-Rivière, who was professor of hygiene in the Lycèe de Paris in 1827. A true follower of Hippocrates, he scourged with the lash of brilliant rhetoric, sustained by statistics and clear bedside observations, the outrageous practice of Broussais. He refers to a mild epidemic of smallpox in 1824, in which 1136 persons died, nine-tenths of whom were subjected to

* It is stated by Haeser that Marcus, a follower of Brown, "consumed in his hospital at Bamberg in one year, 1 drachm of opium, 195 grains of camphor, 529 grains cinchona, besides other medicines, for each of 367 patients." How well endowed this hospital must have been!

repeated bleedings. Dr. Frappart ordered for one patient 1800 leeches, under which the latter promptly died. These statements brought Rivière before the courts, which mulcted him in the sum of 500 francs damages and prohibited his book! During the reign of the bloodthirsty Moloch few dared to rebel against the scientific ministers of this healer (?). Rivière suffered for his temerity.

So great continued the influence of spoliative medicine that the renowned Laennec actually prescribed moderate venesection and large doses of tartar emetic in pneumonia, which proves that Laennec's therapeutic insight was not as deep as was his diagnostic skill. The latter is also evident from the fact that he attempted to create artificial sea air in the badly ventilated wards of his hospital, by scattering fresh seaweeds under the beds of his phthisical patients!

The time was now ripe for a reform! The great French school founded by Bichat gave birth to such men as Louis, Andral, and Magendie. These laid the foundation for exposing the fatal errors of Broussais and of his predecessors. Andral and Gavarret, whose blood studies were the pride of physiological text-books in my student days, opposed the spilling of blood and resorted to cathartics and emetics. Magendie, the father of modern physiology, exercised an enormous influence in favor of rational therapeutics. "Medicine," he wrote, "is nothing more than the physiology of the sick man. It is really depressing to examine the different remedies used in each disease. Let us examine how things are going in our Parisian clinics. Take a case of typhus. One practitioner treats it with purgatives, another with bleeding, a third with so-called tonics. Others, to which category I belong, allow the disease to go undisturbed through its various stages."

Nevertheless Magendie was not a therapeutic nihilist; for he investigated, with that acumen which has immortalized him, the various medicinal alkaloids, in order to obtain from animal experimentation positive results not to be obtained from crude drugs, thus conferring a lasting benefit, which we of the present day still enjoy. He assisted most efficiently in overthrowing the fatal doctrine of local phlogosis urged so brilliantly by Broussais, and he insisted that "the entire organism must be regarded in our treatment of disease. It must not be forgotten," said he, "that a pneumonia patient suffers from something else besides a diseased lung."

Louis, who sought to establish the numerical method for proving the value of remedies, published a work on pneumonia to prove the inutility of venesection, whether it was copious or moderate. "The result of my investigations," he writes, "upon venesection agrees so little with the universal opinion that I hesitate to publish it."

In England many eminent physicians gradually abandoned extreme spoliative methods in acute disease and adopted an entirely opposite treatment in chronic diseases, which they regarded as due to debility. Iron, cinchona, and other tonics were judiciously applied in connection with hygienic and dietetic measures. To the credit of English medicine be it said that the first work upon the hygienic treatment of chronic diseases was written by Sir James Clark ("On the Sanative Influence of Climate"). Thus the seed for more rational therapeutics was sown among the leading medical minds of England, while the ordinary practitioners still continued to bleed and purge and vomit their long-suffering patients.

While rational methods of treatment, based upon professedly exact pathological and chemical data, were promulgated by the greatest physicians of France and England, there appeared a reform movement in Germany—a new system, which was distinctly outspoken in its theory and diametrically opposite in practice to all former ones. I refer to homeopathy.

Hitherto the fanciful structures of the system builders were sufficiently strong to resist the incubus of venesection and depleting measures, which like a great ogre sat upon and overshadowed them all.

The voices which now and then were raised against these spoliative methods, though earnest and soul-stirring, proved too feeble amid the general acclaim for depletion. We are too familiar with the eccentricities of Hahnemann, which have been long inveighed against by many earnest physicians (called by his followers allopaths). And yet when we compare the crudities of Hahnemann with the fatal doctrines which have weighed like a nightmare upon the practices of our own predecessors, we may discern very little if any cause for the diatribes that have been launched against homeopathy. I am free to confess that medicine really is indebted to Hahnemann for having dared to set his face against the universal and fatal spoliative practice which dominated the entire medical world and oppressed even the

most judicial minds. As you know, he depended entirely upon infinitesimal doses, whose inertness the following example shows. He writes: "When lycopodium is treated in the manner homeopathic art develops crude drugs, and one grain is brought by means of triple trituration of one hour, each time with 100 grains of milk-sugar, to the millionth dilution and potency, a remedy of such wonderful activity is produced that one grain of it dissolved in 100 drops of dilute alcohol and twice shaken in the hands, results in a fluid which in the smallest possible dose is still too active in the disease for which it is appropriate. Not until the potentized sextillionth dilution is produced does the drug begin to be useful."

Such positively inert medication, to which he wisely added good dietetic and hygienic management, surely left the *vis medicatrix* full sway, and right royally did Dame Nature assert herself. Hahnemann thus became unwittingly the creator of an epoch in medicine, to which may be traced the reinstatement of the doctrines of Hippocrates and Erisistratus, untrammeled by the anatomical and physiological obscurity of their day.

(To be continued)

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*THE EMPLOYMENT OF THE KALT SUTURE IN CRITICAL CASES OF CATARACT EXTRACTION.**

By S. D. Risley, A.M., M.D., Philadelphia, Pa.,
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While in Paris in 1894 I had the opportunity to see Dr. Kalt of that city insert the corneoscleral suture devised by him in six cases of cataract extraction. His claim was that it diminished the percentage of iris prolapse after simple extraction.

The suture was introduced before the corneal section was made, and the lips of the wound drawn firmly together after the delivery of the lens and the toilet of the eye had been effected. The suture is introduced in the following manner: A short, sharp needle, curved on a short radius and without a cutting edge, is made to enter the clear cornea about 2½ millimeters from the limbus, penetrating behind the anterior limiting membrane and well into the corneal substance proper, but not entering the anterior chamber. The exit is made in the clear cornea near the limbus. The needle is then made to enter the episcleral tissue in like manner just back of the corneal limbus, leaving space sufficient for the corneal section to lie between the scleral and corneal portions of the suture. A loop of thread two or three inches long should be left between the two insertions. This is placed to one side to avoid being cut in making the corneal incision, and is drawn home as the last step in the operation. When the ends of the suture are tied a slight puckering of the cornea is produced, but this disappears at the first or second dressing.

The operation did not, for various reasons, commend itself to me with sufficient force to lead to its adoption in ordinary extraction, but I have employed it in three cases where the attempt to extract the lens was an extremely critical procedure, since in each of them the prolapse of the vitreous would inevitably follow the corneal section, and the loop would be required for the delivery of the lens. In two of the patients the fellow eye was very defective, and in the third case totally blind. Failure, therefore, involved in one case at least permanent and hopeless loss of vision.

Case I.—Laborer, aged forty. Came to Wills Eye Hospital with vision so seriously impaired that he could not perform even coarse labor. His vision had never been good, apparently the result of zonular cataract in both eyes. Many years before his visit to the hospital a double, perfectly smooth iridectomy had been performed, leaving a broad coloboma in the lower and inner quadrant of each iris. Later a partially successful effort had been made to remove the lens on the right side, probably by repeated discissions. Sufficient vision had been secured to enable him to go about, but not to pursue any useful employment. On the left side the entire lens was opaque, the iris was tremulous, the suspensory ligament evidently ruptured.

After consultation with my colleagues at the hospital its removal was decided upon. Assisted by Dr. Harlan I introduced the Kalt suture parallel with a line passing through the axis of the coloboma. The corneal section was then made in the limbus of the cornea and was immediately followed by a large presentation of apparently healthy vitreous. The prolapse was pressed backward by the wire loop, which was then carried back of the lens, and the latter withdrawn with little difficulty, but leaving some opaque cortex

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apparently in the capsule which remained in the eye, the lens evidently escaping through a rupture in its lower periphery. The ends of the suture were then slowly drawn upon, shortening the loop and approximating gradually the lips of the wound over the prolapsed vitreous, which slowly returned within the eye. The suture was then tied firmly, bringing the edges of the wound into apposition, and the eye was closed without loss of vitreous.

The recovery was without accident, and pursued an entirely normal course. The stitch was washed away during the dressing about the fifth day. The result was V. = $\frac{1}{3}$. It is possible that the vitreous in this case might have been replaced by other means, or it might have returned after a few moments of rest with the lids closed, but the danger of infection would have been greater, and I have not been equally successful by other methods in cases of prolapse of the vitreous. The sense of security afforded to the surgeon by the presence of the suture is very great under circumstances where a loss of fortitude by the patient might lead to a complete emptying of the ball. One objection to the presence of the suture is the possible increased danger of infection of the cornea at the points of its insertion and exit; but this was not even threatened in either case here reported, and the danger probably finds compensation even in this respect by the rapid closure of the corneal section.

Case II. — Mr. M., aged forty-one; private patient. Had always had defective eyes, but consulted me on June 26, 1894, for progressive failure of vision, postocular pain, and undue sensibility to light. He had a shallow anterior chamber on each side, and pupils were not larger than an ordinary pin's head. The irides were tremulous, O. D. V. = $\frac{6}{xxiv}$, O. S. V. = $\frac{6}{xxx}$, and he was able to read D. = 1 at about twenty-five centimeters. There was no range of accommodation. He had never worn glasses. The pupils under cocaine and atropine dilated to about 2½ millimeters. Ophthalmoscopic examination of the fundus oculi was unsatisfactory, owing to the small diameter of the pupils. The ophthalmometer indicated an astigmatism in O. D. = 5.00 D. axis of correcting cylinder 105°, and he selected + 1.⊃ + 5.00^c axis 105° V. = $\frac{6}{xii}$; O. S. = 5.00 D. axis of correcting cylinder 75°, and he selected + 1.50⊃ + 5.00^c axis 75° V. = $\frac{6}{xii}$. He received these glasses for constant wear and enjoyed complete relief from the postocular pain, and dread of light. One year later he selected a stronger spherical glass for each eye, the cylinders remaining unchanged, and vision rose to $\frac{6}{ix}$, most letters in $\frac{6}{viii\ 1\text{-}2}$. In January, 1896, he returned with a cataractous lens on the left side, which he said had come on within a few weeks while absent from home, and had been preceded by a return of the postocular pain and dread of light. These symptoms disappeared as soon as he was no longer able to see with the left eye. He had but little difficulty, following the loss of vision in O. S., until August, 1897, when vision began to fail in O. D. from commencing opacity of the lens, the opacification beginning in the upper and outer quadrant, instead of the lower and inner, as is usual. A preliminary iridectomy was then advised for the left eye, and performed on October 26, 1897. The operation was smooth, and the eye recovered without accident, although convalescence was more protracted than usual, and he had frequent photopsies.

A month later extraction of the lens was attempted and was attended with much loss of vitreous and a protracted convalescence, but V. = 20–64 with + 14⊃ + 1.50^c axis 10°, the ophthalmometer showing As. = 1.50 D. axis of correcting cylinder 10°. It is interesting to note the surprising change which had taken place in the corneal radius. Before operation there was 5.00 D. of astigmatism with the rule — *i.e.*, at 105°. After extraction this had disappeared, and the longer radius was at right angles to its former position. As. = 1.50 D., so that a change of curvature amounting in all to 6.50 D., as expressed in the value of the correcting glass, had taken place in the process of healing.

April 4, 1898, a preliminary iridectomy was done on the right eye, and the following October the extraction of the lens. In view of the experience with the left eye the Kalt stitch was introduced. The section was then made, and was followed promptly by a large protrusion of a semifluid vitreous, and the lens was delivered with the loop as in the other eye, leaving some opaque cortex within the eye apparently enclosed in the vitreous, which filled the anterior chamber and protruded through the wound. No attempt was made to remove the remnants of cortex. The ends of the suture were then slowly drawn upon; the protruding vitreous promptly receded, and the lips of the wound were forced into apposition. No vitreous had to be excised. The wound healed promptly and con-

valescence was rapid, so that the patient was discharged from his room in the Polyclinic Hospital in two weeks from the date of operation. A capsulotomy was necessary a few weeks later, after which vision rose to 6–xx with + 14. ⊃ + 2.50^{c} axis 100°. The ophthalmometer indicated 2.50 D. of astigmatism, axis of correcting cylinder at 100°. It will be observed therefore that the prompt healing of the wound made possible by the stitch avoided the marked change in the curvature of the cornea witnessed in the first eye. There a change of 6.50 D. followed the operation, but in the second eye of only 2.50 D.

CASE III.—Female, aged fifty-two. Sent to me at the Wills Eye Hospital by Dr. E. A. Gearhart, of Allentown, Pa., on February 3, 1899. O. D. blind; O. S. counted fingers with much difficulty in upper and outer field, but was unable to go about alone. The eyes were white, T. = n. There was a broad peripheral coloboma at the inner and lower quadrant of the iris in both eyes, and the lenses were opaque. In the left the iris was tremulous, and a wave could be seen in the anterior chamber with every movement of the eye. The suspensory ligament was ruptured. She was free from pain. She had been under the care of Dr. D. Hall at the hospital, and presented the card received at that time. The old record was consulted, when it was found that she had been admitted to the hospital with syphilitic iritis on October 7, 1886. She was then blind in the right eye, and the lense was cataractous. The state of the vision in the left eye is not noted. There was annular synechia in both, for which double iridectomy was done at the same sitting on October 12, 1886. After leaving the hospital she relates that the vision improved in the left eye so that she was able to see her way about her own house until seven years ago, when she was struck in the eye with a stick, since which time she has been helpless. She was extremely solicitous lest she might lose her small modicum of vision still retained, but finally consented to an operation. Profound general anesthesia was secured, and with the aid of my assistant, Dr. Thorington, and the house surgeon, Dr. Ford, the Kalt suture was introduced as in Cases I and II, and a section made parallel with the base of the coloboma in the corneal limbus. A large mass of vitreous immediately presented. The wire loop bent into a spoon shape was then inserted, gently pressing the protruding vitreous backward, and carried well behind the lens, embracing its posterior surface in the concavity of the loop. The lens was delivered without difficulty, its exit being aided by following its movement outward by pressure through the cornea with a horn spatula. The lens was extracted in its capsule and left a clear black pupil. The suture was then drawn upon as in Cases I and II. As the lips of the wound approached, the protruding vitreous slowly returned within the wound, except a small bead at the outer angle, which was excised. The edges of the corneal section were gently stroked into close and smooth coaptation, and the suture firmly tied. The eye was closed, a cross of isinglass plaster placed over the lids, and a cotton pad and bandage applied. The eye recovered without reaction. There was slight bulging of the wound at the outer angle on the third day, where the vitreous had been excised, but the anterior chamber was restored, and the patient was able to count fingers in candle-light. The stitch was removed on the seventh day, and the patient allowed to get out of bed. There had been no evidence of infection around the threads at any time. On the tenth day the eye was quiet and rapidly losing its injection. A minute scar could be seen in the cornea at the site of the suture, but was larger and much more conspicuous at the scleral portion of the stitch. The anterior chamber was of normal depth, and the cornea showed no distortion. The wound was smooth and flat throughout its entire extent, and the pupil clear and black. Patient is greatly pleased over her improved sight, but no letters can be made out.

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*CUTANEOUS BURNS AND THEIR TREATMENT.**

BY ELLICE M. ALGER, M.D.,
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Technically a cutaneous burn may be defined as an inflammation of the skin produced by heat, but clinically those inflammatory conditions caused by the sun and by electricity must be included, though the heat produced by them is not the principal factor in all cases. The earliest classification of burns was that of the celebrated Dupuytren, who divided all burns into six degrees according to the extent of the tissue destruction, but there has been a growing tendency

* Read before the New York Medical Union, March 28, 1899.

to simplify this classification, and Rayer's modification of it has come into general use. This extends only to three degrees, the first including all burns characterized by simple reddening of the skin, without vesication, the second those in which vesicles or blebs form but without doing permanent harm to the skin, and the third those in which enough tissue is destroyed to cause the formation of scars.

Theoretically burns of each degree should present characteristic features, both clinically and microscopically, but in actual practice we not infrequently find lesions of all three degrees in the same case, while very often lesions of the first and second degrees are changed by the invasion of bacteria into lesions of the second and third. Burns of the first are often trifling affairs, but when extensive may be productive of much discomfort and even constitutional disturbance. The skin becomes decidedly red and swollen, presenting an appearance not unlike that of erysipelas without its sharp definition; pressure momentarily drives the blood away, leaving a dirty, yellowish stain, and when the pressure is removed the blood flows back very slowly. In the course of a few hours or days the redness is gradually obscured by thickening of the epidermis, the swelling gradually disappears, and a process of exfoliation continues until the skin is again normal in thickness.

Clinically burns of the first degree, whether produced by dry or moist heat or by the sun, present about the same appearance, but pathologically they are very different.

A sunburn is not at all dependent on the production of heat, for it is especially marked in certain skins exposed to the action of sunlight reflected from water and snow and ice, even though the temperature may be many degrees below zero. A burn of this kind is probably due to the action of the violet rays of the spectrum on skins predisposed to the process. Presumably the actinic rays exert a chemotactic action capable not only of causing the development of pigment in the skin, but when long continued, of producing true inflammation and exudation. The pigment is supposed to be formed from disintegrated red blood cells.

Burns of the first degree which proceed from the direct application of heat are much better understood. The first effect of intense heat on the skin is the stretching of the horny layer, which when the heat is dry remains stretched and loses its elasticity. This is very well shown by the little horny ridges that follow the light application of the Paquelin cautery to the skin in lumbago. In the living subject the usual changes comprised by the word inflammation begin at once and last a varying time, but as no essential part of the skin has been destroyed no permanent damage to its integrity results. In the way of treatment the only indications are to relieve pain and to hasten the exfoliation of dead skin, both of which are met by the application of a five-per-cent watery solution of ichthyol to which a little starch and albumen have been added.

In burns of the second degree the skin is at first considerably reddened, and within a short time vesicles appear, large or small, flaccid or tense. Many vesicles discharge their contents, and only tags and shreds remain. Their size varies greatly and depends largely on the thickness of the skin, those over thin areas becoming very large and rupturing early, while those in thicker locations appear much later and are smaller in size. Eventually the blebs break and suppurate if let alone, or dry down and form crusts and scales, which drop off. Very naturally burns of the second degree, if extensive, may be productive of great agony and shock.

Pathologically, the first effect of the heat is the stretching of the horny layer, which remains, if the heat has been dry, somewhat raised and inelastic. At the same time there is not infrequently, if the heat has been intense, enough steam developed from the moisture in the tissues to cause an instantaneous appearance of small vesicles; but the formation of true burn vesicles and bullæ is a later and entirely different manifestation. Here there is an evident distinction between the action of moist and dry heat. In the dry burn the horny layer remains permanently stretched and appears loose, and as a result the exudation, even if it be slight, is distributed pretty evenly under its cover because of the lack of outside pressure. In the moist burn, while the cover is stretched by the heat it retains its elasticity and at once regains its shape. As a result, when exudation does occur the size and shape of the bullæ depend entirely on the amount of fluid, first appearing in the center, where pressure is least, and spreading gradually toward the margin, where pressure is greatest.

In a dry burn we may find a good many flaccid bullæ, because the horny layer is stretched over a large area, but the burn

being superficial, not enough fluid is produced to make the bullæ tense. Therefore the bullæ in a dry burn tend to be flat-topped. In the scald, on the other hand, the elastic vesical wall fits closely over the fluid, be it great or little, and the vesicles are tense and tend to assume a dome shape. The amount of exudation seems to depend on the extent of damage done the prickle cell layer, and is regarded as due to chemotaxis following the death of tissue.

The inflammatory process is greater than in primary burns, but no essential structure is destroyed and no scar follows.

The indications for treatment in such burns are three: first, to relieve pain, which is always intense; secondly, to prevent infection, which is certain to produce cosmetic defects, and may cause grave constitutional disturbance; and thirdly, to hasten repair by increasing cornification. For relief of pain immersion in water is one of the oldest and most successful methods, but it must in most cases be a temporary expedient, for a wet dressing does not by any means answer the same purpose. In those extensive burns where life itself is in danger there is no treatment to compare with it. The patient lies day and night in a tub of running water, which is kept at about the body temperature and may be medicated if desired. By the constant flow of water air is kept from the surface and good drainage assured. Repair is somewhat hindered by the constant soaking, but the keeping the patient in comfort till all danger of shock is past is of far more importance.

In milder cases the application of carron oil (equal parts linseed oil and lime-water) has been for years a popular dressing, and if some antiseptic be used with it every indication is met; however, it is an ill-smelling, disagreeable dressing. When healing has progressed somewhat further it can be replaced by any soft antiseptic ointment like carbolized vaselin or aristol ointment. Cocaine solutions are never essential.

In all cases of burns beyond the first degree antisepsis should be carefully maintained, and in this connection it should be remembered that absorption occurs very readily from a burned surface. For this reason antiseptics such as carbolic acid and bichloride should be used in very weak solution and never applied as permanent wet dressings. A one-per-cent creolin solution makes a very serviceable antiseptic devoid of toxic properties, but boric acid and borax are the best drugs of their kind to use. Formalin in my experience has proven very irritating.

For the last two years I have been using a solution of picric acid, not only on burns of the second degree, but on other cutaneous affections attended by the formation of vesicles, and with very satisfactory results. It is a yellowish, crystalline powder, produced by the action of nitric acid on phenol, and is freely soluble in alcohol and less so in water. It is a good antiseptic and oxidizing agent, and has of late years been considered one of the best reagents for detecting albumin in urine. It is not by any means a new drug, but has lately been taken up by the French school of dermatologists, who recommend its use in aqueous solutions of from two to five per cent. It can be used in primary burns, for it relieves the pain almost at once and promotes cornification and exfoliation to a considerable degree; but it has the disadvantage of staining the skin a bright yellow, which in many cases might outweigh its advantages. Accidentally I found that the combination of picric and citric acids, which Esbach long ago devised for the detection of albumin, was more effective than the picric acid alone.

Esbach's solution consists of 10 parts of picric acid, 20 of citric acid, and 1000 of water. Without any elaborate attempts at antisepsis the bullæ and vesicles should be opened with a clean blade and the fluid applied freely, care being taken that the solution reaches the interior of each one. Picric acid is rather a weak acid and coagulates albumin poorly in an alkaline medium. The citric acid acidulates the alkaline contents of the vesicles, which the picric acid promptly converts into an antiseptic coagulum capable of resisting infection and excluding the air. The combination after the first smart has passed removes the pain more quickly and completely than anything I have ever tried. After the excess of fluid has drained off the part may be covered with rubber tissue or soft gauze and left undisturbed for several days. It makes a clean and comfortable dressing, and I have never observed any toxic effects, though I have several times used it over quite large surfaces. Two cases of poisoning by picric acid have come to my notice, but in both six ounces of ten-per-cent ointment were used over extensive surfaces in very young children; the symptoms being very like those from carbolic acid poisoning.

After two or three days the fluid should be reapplied to such areas as are moist and the part carefully recovered.

In burns of the third degree the color of the dead skin is apt to vary very much in different cases. Sometimes it is ivory white with the course of the blood-vessels marked by brownish lines; in other cases the whole skin may be brown or even black. It is dry and hard and devoid of sensation. Many times it is impossible to estimate the extent of the damage, but after a few days the dead tissues begin to separate from the living, and after the usual process of suppuration the slough comes away and scar tissue forms. When such a burn becomes infected and suppurates freely the stench is frightful. In a good many cases the deeper lying portions of the skin, like the glandular appendages and hair follicles, are not entirely destroyed, and forming centers for epithelial cell proliferation, lessen the amount of scarring. The process of repair is naturally much slower than in burns of the second degree. The variation in color of the dead skin is perhaps susceptible of this explanation. When the skin is subjected to moist heat of a high degree for some time it is converted into a gelatinous mass, white in color, while the blood in the vessels becomes a dirty brown; on the other hand, when dry heat is continuously applied the skin first becomes gelatinous and white from being steamed in its own juices, and afterward brown when it is burned to a condition of dryness, and finally black when carbonization has taken place. Burns of the third degree often produce very extensive scars, the after contraction of which may cause serious deformity. The pain is not a marked feature at first, for the whole skin with its nerve terminals is dead, but after the dead tissue has separated the granulations are often exquisitely sensitive.

The treatment must be largely confined to the limitation of suppuration and scar formation. The separation of sloughs is hastened by wet dressings of boric acid, and the formation of healthy granulation is aided by applications of balsam of Peru or silver nitrate. In extensive burns, or where a scar would cause deformity or disability, skin-grafting after the method of Thiersch should be done.

I cannot lay claim to any extended experience in skin-grafting, and speak of the subject largely for the purpose of obtaining information from others who may discuss it. It seems like a simple enough procedure. The grafts are cut with a razor from the skin of the same patient or another under general anesthesia or infiltration anesthesia with a weak cocaine solution, planted at once on the healthy granulations, and afterward covered with rubber protective and not disturbed for several days. If the grafts are put close together and take nicely suppuration stops; if they are separate, each one acts as a center of cell proliferation, and the intervening space, if not too great, is finally covered.

As regards antiseptic precautions, the granulating surface suppurates freely, and I presume it is a practical impossibility to secure absolute asepsis. I have used at different times peroxide and boric acid and salt solution and plain boiled water for purposes of cleanliness, and the grafts took about equally well in all. Of course, the skin from which the grafts are cut should be sterilized, and any solution which could interfere with union on either graft or granulation should be washed off with salt solution.

As regards the thickness of the grafts, some of the books say the thicker the grafts the more the result looks like normal skin, and I have heard men of some experience say the thinner the grafts the better they take. In my own experience it seemed that the grafts of the thickness of tissue-paper took equally well and formed as satisfactory cuticle, while of the thicker ones only the lower layers of cells remained adherent to the granulations, the upper ones generally coming away at the first dressing. I have once or twice used grafts from a second individual, and it has not seemed to me that they took as well as those from the same patient, but this may not be the common experience.

The prognosis in burns of all degrees depends more on the condition of the patient and the extent of the burn than on its depth. As a general rule burns involving one-third to one-half the cutaneous surface are said to prove fatal in from eighteen to forty-eight hours. The cause of death is a matter of dispute to this day. According to Von Loeser death is the result of an acute oligocythemia following the destruction of red cells and accompanied by a fall of temperature from lack of oxygen and nutrition in the tissues. Lustgarten lays it to ptomaine poisoning, and others have ascribed it to the destruction of sweat glands producing a condition analogous to that of the varnished animal. According to Silberman thrombi formed from disintegrated blood cells are

deposited in the pulmonary artery, thus causing a venous stasis and accounting for the congestion of internal organs, the dyspnea, cyanosis, anuria, and coma. Perforating ulcer of the duodenum occurs as late as the tenth day, leaving a clearly cut opening very suggestive of embolism. Erichsen, perhaps conveying as much definite information as the rest, pronounced shock to be the cause of death.

It remains to say a word regarding burns by electricity, which are very frequent now that so many individuals have to do with its production and use. So far as I have been able to ascertain there has so far been placed on record no careful study of the nature and pathology of this variety of burn, and while I have personally seen quite a number of cases I would not venture to discuss a condition which depends on so many varying factors.

Clinically, electrical burns may present symptoms of either of the three degrees, but microscopically they will probably be found to differ in a good many points, owing to the effects of the strong currents on cell life aside from the actual heat developed. The heat effects are probably mostly shown upon the skin, for electricity develops heat only when the resistance to its progress is great, and it is a well known fact that in the skin this resistance is very great, while in the other tissues it is very slight. Conversely, the other effects of electricity are more likely to show themselves in the subcutaneous tissues, for the current tends to travel along the path of least resistance. Theoretically, the severity and extent of the burn should depend to some degree upon the condition of the skin, whether dry or moist, for an abundance of salt containing sweat would lessen the resistance and with it the heat produced. In electrocutions I am informed that when the electrodes are properly moistened so that the skin resistance is eliminated, death ensues without any burning, and it may be this factor of skin resistance which would explain the harmless passage through the body of currents usually sufficient to cause death.

Owing to the secondary effect of the current on tissues not actually burned, it is almost impossible to forecast the result of electrical burns, but it is almost certain to be worse than any other variety. In my experience, which coincides with that of others, even if the tissues do not slough the process of repair is very slow and the prognosis should be very guarded.

THE TREATMENT OF CROUPOUS PNEUMONIA WITH HOT-WATER BAGS.

The *Maryland Medical Journal* of March 25, 1899, has in it an article by KOLIPINSKI on this theme. He thinks that as soon as croupous pneumonia is diagnosed, the treatment should be as follows: A pair of hot-water bags are selected, the largest size found in the shops, preferably of the capacity of a gallon. These are filled with boiling water, well secured from leakage, and each one wrapped in a small shawl of compact texture or in a portion of blanket cut for the purpose. They are then placed side by side on the bed so that the mouths of the bags point upwards; over them is placed a third shawl folded several times, or a further piece of blanket; above them two or possibly three pillows are arranged for the patient's head. The bags thus form a sort of shallow cradle for the postscapular regions. To make the plan clear to the attendant he is told that the bags must be placed like a knapsack on the back of a soldier and a little higher up as well. The bags are refilled every three or four hours. The exterior temperature, found by placing a common atmospheric thermometer between the coverings of the bags and the patient, varies from 95° to 130° F. A mean temperature of 110° F. should be aimed at, as an elevation of 120° F. or more is liable to inflict severe burns on the skin, particularly so if the patient's cutaneous sensibility is for the time obtunded. These burns, which Dr. Kolipinski says he has frequently met with, due to the overzeal or excitability of the attendants, have no untoward effect in the course of the lung fever, but very probably the opposite, and a pneumonia may disappear in a day or two when this accident has happened, although the injury itself may remain for two or three weeks.

The bag treatment is continued without intermission until the body temperature returns to normal and remains so for a day or two.

THE TREATMENT OF ACUTE RHEUMATISM BY METHYLENE BLUE.

LEMOINE has reported to *La Presse Médicale* of February 1, 1899, his employment of methylene blue in acute articular rheumatism, and claims to produce results which are equal to those produced by salicylate of sodium. It also acts well in gonorrheal rheumatism. He states it is essential that the blue which is employed shall be free from contamination by zinc.

The Therapeutic Gazette

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Leading Articles.

DANGER IN DRUGS OF UNKNOWN POWER.

In the May issue of the THERAPEUTIC GAZETTE, under the head of "Notes and Queries," will be found the call issued by the President of the Convention for a revision of the Pharmacopœia.

We have already, in earlier issues of the GAZETTE, urged that in the new revision care be taken to exclude useless drugs, that a dose list of approximate minimum and maximum quantities be introduced, and far more important than all, that whenever possible drugs should be standardized by careful chemical assay, *or where this is impossible, by physiological test.*

It has always seemed to us that medical men were contented to a large degree to carry out the cynical statement of the man who remarked that "physicians were persons who poured drugs of which they knew little into the bodies of patients of which they knew less," and there is scarcely a physician who, after studying his case with the greatest skill and with the aid of all possible modern appliances, will not be careless enough to prescribe a tincture, fluid extract, or other preparation of some active substance, upon which the life of the patient and his reputation may depend, without making any investigation as to whether the pharmacopœial product which is dispensed is capable of producing the results which a standard preparation should produce.

The writer of this editorial very frequently sees in consultation cases in which physicians have administered digitalis in varying doses with disappointing results, either because the drug has failed to do good through inherent weakness, or else because it has been so unduly strong that ordinary doses have produced such distinct physiological symptoms as almost to amount to conditions of mild poisoning, and when a properly standardized and physiological preparation of digitalis is substituted the results at first sought are promptly obtained.

It has been stated that chemical analysis and physiological testing are not practicable, in that it is impossible for the ordinary druggist who prepares his galenical preparations to go to the expense of time and labor in making these tests. It seems to us that this argument is so fallacious as to be actually dangerous.

When physicians employ chemical compounds in medicine they are careful to see that these compounds are made by manufacturing chemists whose ability and reputation guarantee that the proportions of the various ingredients are chemically correct, and any physician or druggist who was careless enough to dispense a chemical compound in which the proportions were faulty, and who failed to produce good results, would certainly be considered criminally negligent. In other words, we have come to a recognition of the fact that large chemical firms are enabled to employ skilled and trained assistants, under whose supervision only accurately compounded substances can be issued. Surely in the case of vegetable substances, which constantly differ in their strength, equally carefully trained directors should be constantly at work to standardize their products.

Every farmer knows that his crop of oats and wheat will vary with the condition of the soil and the amount of rain and sunlight to which it is exposed, and if he is intelligent he will also know that the various active food ingredients in the oats and wheat will vary according to whether his crop is exposed to

favorable or unfavorable conditions; yet the physician, who as a rule has far better mental training, fails to recognize that the medicinal ingredients of digitalis and all the other important vegetable drugs are subject to the same influence as ordinary food products, and yet he is content to employ digitalis leaves which grew he knows not where and under circumstances which in some cases may have made them inordinately powerful and in other instances practically devoid of medicinal ability.

In our struggle with disease we are sufficiently handicapped by the fact that man is mortal and that our knowledge is limited, without in addition adding to the difficulties by the employment of uncertain products when accurate ones can be readily obtained.

Three important drugs have already been standardized under the action of the last committee on revision. Let the good work go on, and let the convention of 1900 mark an epoch in the history of American Pharmacy and Medicine by the changes that we have suggested.

THE RATIONAL TREATMENT OF PNEUMONIA.

In this issue of the THERAPEUTIC GAZETTE is an interesting article by Dr. Elsner, of Syracuse, upon this question, and in it he emphasizes several points which we believe to be of vital importance in the treatment of this malady. The most important, however, is the fact which he mentions, namely, that in this disease we find almost constantly marked relaxation of the blood-vessels, whereby the normal resistance of the action of the heart is removed and it pumps futilely in an effort to fill blood-vessels which are so widely dilated that there is not enough blood in the body to supply them.

It will be noticed that in one place he inveighs against the common use of nitroglycerin in these diseases, and points out that experimental study has shown that the toxins of pneumonia cause vasomotor relaxation or paralysis, a condition which is produced by all the nitrites, and therefore the administration of nitroglycerin simply increases the difficulty under which the patient is laboring.

It seems to us that this point is well taken. While on the one hand we recognize that at times in the course of pneumonia the heart may be relieved by lowering arterial tension by the use of this drug, on the other hand, taking the course of the disease as it usually occurs, such treatment is not usually necessary. The methods which Dr. Elsner advises for the purpose of overcoming these conditions of vasomotor relaxation are all of them wise, but there is one which we have been in the habit of employing with the greatest possible satisfaction and which he does not emphasize, namely, the use of belladonna or atropine, often combined with small doses of digitalis, as for example five minims of a tincture of digitalis made by diluting "normal liquid" digitalis with alcohol until its strength represents that of the tincture, given every six hours, and five to ten minims of tincture of belladonna every three hours; or if the condition of the heart is exceedingly pressing and the blood paths are relaxed, the skin being moist and covered with a clammy sweat, we immediately administer hypodermically $\frac{1}{150}$ or $\frac{1}{100}$ of a grain of atropine sulphate and $\frac{1}{30}$ grain of strychnine to bridge the patient over his crisis until the drugs administered by the mouth have an opportunity to act.

We are glad to find that Dr. Elsner holds the views that he does, for these have been our views for a number of years, and we have again and again reiterated our opinion that physicians are too apt to ignore the condition of the blood-vessels in the treatment of acute disease, and concentrate their attention upon the heart muscle itself.

The readers of the THERAPEUTIC GAZETTE may perhaps remember an article by the writer upon the "Vasomotor System as a Factor in Disease," which was published some years ago, and also that we have drawn attention to the importance of this part of the circulatory apparatus in an editorial more than once.

THE TREATMENT OF INTESTINAL PERFORATION IN TYPHOID FEVER.

Another article in this number, which seems to us worthy of editorial comment, is that of Dr. Taylor upon this subject. We have during the last eighteen months published in the editorial and progress columns of the GAZETTE a number of contributions in regard to this very important question, and it will be remembered that professional opinion is more and more in favor of operative interference in this dreadful complication of typhoid fever, which is fatal in nearly every case unless the surgeon can give relief. Even when it is possible for him to operate, the mortality is

still very high, but the percentage of cases which have been saved makes it well worth while to do abdominal section in nearly every instance, not only because cases which were apparently hopeless have been saved, but also because even in patients who were apparently at death's door the operative interference, followed by washing out of the abdominal cavity with normal saline solution, has caused them to rally and frequently to recover.

The two most important questions in connection with this subject, after deciding that operative interference is wise, are, first, as to the diagnosis of the condition, and second, as to when operation should be performed. While the text-books may seem to indicate that a diagnosis of intestinal perforation in typhoid fever is a simple matter, those who have had most experience know it is not easy, and that at times it is exceedingly difficult. As is pointed out in the writer's recent monograph upon "The Medical Complications and Sequelæ of Typhoid Fever," other conditions than actual perforation may cause violent abdominal pain and symptoms of collapse. Peritonitis may arise from infection of the peritoneum through the intestinal wall, before it is perforated; the rupture of a mesenteric gland, which has undergone suppuration, may produce similar symptoms; and more than all, it is important to remember that a certain proportion of cases of perforation occur in which pain is very moderate or entirely absent.

A very important diagnostic aid in determining the fact that the abdominal pain or disturbance is due to an acute inflammatory process in the peritoneal cavity is an examination of the blood. It is a well known fact that the leucocytes are not increased in typhoid fever as they are in other infectious diseases, unless some acute inflammatory complication arises, and therefore, if in association with marked abdominal symptoms leucocytosis develops, we at least have reason to believe that an inflammatory complication has arisen, although leucocytosis by no means proves that perforation itself has occurred.

The experience of some practitioners, notably that of Dr. Cushing, indicates that in cases in which there is a good deal of abdominal discomfort and pain, and in which perforation is imminent by reason of the near approach of the ulcerating process to the peritoneal covering of the intestine, leucocytosis may occur in what has been called the preperforative stage, and that if leucocytosis is very marked and rapidly increases, abdominal section as a preventive measure is perhaps justified. These studies are very suggestive, although as yet it does not seem possible to rely on them absolutely.

THE TREATMENT OF SOFT CHANCRES.

The term soft chancre, or chancroid, is one commonly applied to all venereal lesions which are not syphilitic—*i.e.*, to herpes, severe balanoposthitis, infected abrasions, and a large number of genital lesions, which under simple treatment by ordinary cleansing applications heal in a few days, or at most in one or two weeks. The researches of Unna, Ducrey, Krefting, Peterson, and a host of others have, however, proven as conclusively as is possible, in the absence of inoculation from pure cultures grown on artificial media, that a chancroid is a distinct entity, dependent upon a specific strepto-bacillus, of characteristic form, size, and grouping. Moreover, it is well known to clinicians that while the ordinary infected trauma of the genitalia heals in a short time under any simple treatment, chancroid undergoes a period of evolution and extension for a period of three or four weeks, in spite of the most careful and persistent application of mild cleansing medicaments, after which it gradually heals; when the lesion is placed about the frenum, if it has once attained headway, a period of from four to eight weeks is likely to elapse before it is completely cured. In other words, the virus of a true chancroid, though little affected by mild local applications, is finally rendered inert by the tissue resistance of the body; and providing this is fairly strong, the bacilli are so acted upon that they are not capable of further multiplication at or about their seat of inoculation, nor can they be inoculated successfully to another part of the body, nor to another person.

These facts being true, the question of aborting a chancroid—*i.e.*, of destroying the virus before it has penetrated into the tissues so deeply that it cannot be reached by germicides—becomes of prime importance. It is interesting to note that Horovitz, in a recent contribution on the subject of chancroid (*Centralblatt für die Gesammte Therapie*, April, 1899), states that abortion is not possible, basing his belief on the well known fact that a chancroid has no distinct period of incubation, but may develop in a few hours. He advises, however, where it is practicable, that the chancroid should be seized in tooth-

forceps and cut out by a snip of the scissors; this operation being preceded by a thorough cleansing of the surrounding parts, and the incision being carried wide of the disease. The resulting wound is closed by suture.

The experience of the majority of surgeons who have attempted this method of procedure in any considerable number of cases is to the effect that chancroidal infection of the resulting wound is extremely likely to occur, resulting in a much larger and more serious lesion than that for the relief of which the primary operation was attempted. The destruction of the sore in its early stages by chemical applications, such as pure carbolic acid or nitric acid, Horovitz utterly rejects. In this again he differs widely from American practitioners. Clinical experience has demonstrated conclusively that in their early stages the vast majority of chancroids can be painlessly and totally deprived of their specific properties by the application of a strong solution of cocaine, followed by thorough impregnation with pure carbolic acid. This should, however, be followed in turn by a thorough cleansing of the entire region about the sore, and the application of a dressing kept wet with a mildly antiseptic lotion.

In preference to any attempt at operative treatment, Horovitz advises a thorough cleansing of the region affected by the sore with a sublimate solution 1:3000, or carbolic solution 1:20. The ulcer is then covered with iodoform powder or iodoform gauze, over which is placed cotton soaked in a five-per-cent solution of carbolic acid; over this is placed an air-tight bandage, which is left on for two or three days. This air-tight bandage seems to have for its main object the confining of the disagreeable odor of iodoform. Airol is suggested as a substitute for iodoform. The author notes that edematous swelling often follows this dressing.

Theoretically it would seem to be almost as pernicious a means of treating chancroid as could possibly be devised. A single application of a five-per-cent carbolic acid solution to the sensitive skin of the genitalia is even in itself enough to cause an edema which offers most favoring conditions for the rapid and dangerous spreading of a chancroid. All dusting powders are to be avoided, excepting in the late stages of the disease, when the specific nature of the infection has been lost, because by forming a crust, and retaining secretion, they act as powerful favoring factors in the production of bubo. Moreover, any dressing which is left on three days would, in addition to favoring this complication, encourage an inflammation of the surrounding parts by decomposition of the retained secretion.

The most successful treatment of chancroid, when the period for attempting abortive treatment has passed by, or when this has failed, is by frequently repeated cleansing and the application of gauze or cotton soaked in a mild antiseptic lotion, such as lead-water, blackwash, creolin, or very dilute bichloride of mercury lotion. The constant changing of the dressing—and it should be changed at least every two hours—keeps the parts perfectly clean, and thus prevents the formation of bubo. Moreover, the astringent action of a lotion such as dilute lead-water prevents the development of edema, and thus increases the local resistance of the tissues. Also there can be no doubt that although the germs do penetrate more or less deeply into the tissues, the mild antiseptics applied directly to the clean ulcerating surface also to a certain extent penetrate and inhibit growth.

The reports of clinics show, in practically all countries, that there has been an enormous diminution in the number of chancroids, and that chancre is at the present time a much more frequent lesion. There is some reason to hope, with Peck, that in the future a greater dependence upon the medical profession on the part of the public may cause the complete disappearance of chancroid from the list of common diseases. Until that time comes, however, surgeons, and particularly those who have charge of out-patient departments, will have large numbers of chancroids to treat. It is to be hoped that if they do not succeed in abortive measures, and most important among all these perhaps is the local application of heat, they will devote their main attention to the question of local cleanliness, thorough drainage, and the avoidance of all irritating applications which may encourage local edema.

Reports on Therapeutic Progress

SUBCUTANEOUS INJECTIONS OF ARTIFICIAL SERUM IN TYPHOID FEVER.

GIGLIOLI and CALVO (*Contributo Clinico allo Studio delle Injecioni sottocutanee di Siero Artificiale nella Febra Tifoidea*, Florence, 1899) report the results of a series of trials of subcutaneous injections of artificial serum (physiological solution of chloride of sodium) in a recent epidemic of typhoid fever in the

outskirts of Florence. The injections were made on the outer aspect of each thigh alternately, 500 cubic centimeters of the solution being administered in one injection. Control experiments were made on two persons in good health, in whom the effect of the injections was to produce slight agitation, sweating, an abundant flow of urine, but no marked rise of temperature. Details are given of eighteen cases of varying degrees of severity and in various stages of the evolution of the disease. The phenomena of reaction following the injections consisted, generally speaking, in the majority of cases, in a characteristic modification of the thermic curve, gradual rise of temperature to the extent of 3° C., with subsequent fall to normal, slight general depression, sweating, and increased excretion of urine. The authors never observed nausea, vomiting, shivering, or mental excitement noted by other observers, and they think this probably due to the fact that in no single injection did the dose exceed 500 cubic centimeters, while the procedure was carried out slowly with slight pressure, so that absorption could take place in a slow and continuous manner. Immediately after the injection the pulse was always accelerated, but was stronger and more regular. In the majority of the cases—even in those of greatest severity, in which the temperature fell but slightly or not at all after the injection—when the reaction had ceased, an improvement in the general condition was noted, but this effect was naturally more marked in cases in which the injections caused a distinct fall of temperature and improvement in the pulse.

Summing up their results, the authors say that, while the method is not to be regarded as a specific in typhoid fever, it affords a valuable means of relieving symptoms. In cases in which the disease was relatively mild, and the temperature not too elevated, injections were followed by a marked feeling of relief and a lowering of temperature, which, however, did not become lasting till after several injections had been given. But even in the most favorable cases the authors do not feel justified in stating that the injections were the principal factor in the cure. At most they hastened it, and made it easier. In cases where the temperature was very high and the disease very severe, or in which there were cardiac or nervous complications, the effect was practically *nil*. The authors think, however, that in every case these injections, which are perfectly harmless, might supply a useful means of prognosis, since the intensity of reaction varies directly with the intensity of the infection, and may thus be taken as an index of the severity of the disease.—*British Medical Journal*, March 11, 1899.

SOME CLINICAL ASPECTS OF GRANULAR KIDNEY.

In the Lettsomian Lectures for this year WEST goes over the subject of granular kidney exhaustively, and from the *British Medical Journal* of March 11, 1899, we find that he has something to say of its treatment.

If we knew the causes of the disease we might take steps to prevent it; but not only are the causes unknown, but the disease is not even recognized in most cases until it is already far advanced. Little or nothing definite, therefore, can be done at present in the way of prophylaxis or prevention. But as it is in the early stages that we are likely to be able to do most good, the importance of an early diagnosis is obvious. Nor when the disease is far advanced can it be cured, for scar tissue cannot be removed from the kidney by therapeutic means any more than from the skin or from the liver.

But because we do not know at present how to prevent the disease developing, and cannot restore the diseased organs to their normal condition, it does not follow that treatment is of no avail. If we cannot treat the disease we can at any rate treat the patient; if we cannot cure the lesion we can at any rate attack the symptoms. If we can relieve the patient of the symptoms which trouble him, he will care but little for the morbid lesion; if we can cure his disease—that is, discomfort—he will not much mind the disease.

We cannot cure myxedema, but we now know how to relieve its symptoms. We may hope for similar success hereafter in the treatment of granular kidney.

The objects we should have in view in treatment are:

1. To prevent the disease getting worse, if possible, and to relieve the damaged organ in every way possible. With this in view exposure must be avoided, as well as fatigue of either mind or body; the general health should be kept at its highest level; the diet should be appropriate; and, where feasible, the winter should be spent in a warm, dry, and genial climate.

2. To guard against the accidents specially likely to occur. These are failure of the

heart and rupture of vessels. With this object violent exertion must be avoided, as well as all excessive mental work and anxiety; the patient should lead an easy life, both physical and mental; and where unavoidable illness arises, such as a severe accident or acute pneumonia, if the weak spots are remembered much may be done to diminish the risks.

3. To counteract or relieve symptoms as they arise. Dr. West has already drawn attention to the extreme variability of these symptoms, and the treatment must therefore be correspondingly various also; but it is often surprising when the cause upon which these symptoms depend has been recognized—that is to say, when granular kidney has been diagnosed—how much may be done to give relief.

Of drugs, there is none more useful than nitrate of pilocarpine given in small doses two or three times a day by the mouth, or in urgent cases *sub cutem*. Thus the headache, irritability by day and restlessness by night, vomiting and digestive disturbance, a foul tongue and a dry skin, may all rapidly yield to a dose or two of pilocarpine, and the patient be restored to comfort, or even threatening symptoms of uremia be removed. There is one noteworthy fact about pilocarpine in chronic renal disease, namely, that it often does not produce the sweating which under normal circumstances and in similar doses it causes, and yet without the sweating its effect is striking.

There is one line of treatment to which Dr. West says he wishes more particularly to refer, for it has not so far been investigated as fully as it deserves, and that is the treatment of chronic renal disease by means of renal extracts. He has already said that there is no positive evidence at present of the existence of an internal secretion in the kidney; yet the cachexia which develops in chronic renal disease is not at all unlike that which is met with in Addison's disease or even myxedema. Granular kidney also presents other resemblances with these diseases, in that the grave symptoms do not arise until the organ is very considerably diseased; in fact, as Bradford has shown, it is not until about three-fourths of the total kidney substance has been destroyed that life becomes impossible.

There was the same absence of conclusive evidence in the case of the thyroid gland until the administration of thyroid extract proved by its clinical effects that the symptoms depended upon the wasting of the gland. There can be no doubt clinically that the late symptoms of granular kidney do depend upon the disappearance of the glands, and it is therefore not at all improbable that the kidney has an internal secretion, though absolute proof is not yet forthcoming.

Renal extracts have not been used except in quite the latest stages of granular kidney at a time when probably the disease is too far advanced to be amenable to treatment at all. The subject is, of course, surrounded with difficulties; and yet if we are to do any good at all by this or any other method, we must attack the disease before it has reached its later stages, and before the nutrition and general cachexia are so pronounced.

The first question is whether the administration of renal extracts by the mouth has any effect at all. As has already been said, if pilocarpine be given by the mouth or *sub cutem* to patients with granular kidney, the dose which under ordinary circumstances would produce free sweating often fails to produce this effect. The following experience is one which Dr. West has had on several occasions:

A patient with granular kidney who had been taking nitrate of pilocarpine regularly was given renal tablets two or three times a day. The dose of pilocarpine had hitherto caused no sweating; but within twenty-four hours or so after taking the renal tablets sweating became marked, and followed each dose to such an extent that on some occasions it had to be stopped. As soon as this was done the sweating ceased. After a short interval the pilocarpine was repeated and the sweating returned. The pilocarpine was then continued and the renal tablets stopped, and the sweating again ceased. The administration of renal tablets, therefore, did in these cases modify nutrition in some way so as to permit the nitrate of pilocarpine to have its normal action.

The most striking instance of the effect of the renal tablets occurred in the following case:

A girl, aged thirteen, was under treatment for what appeared to be acute nephritis. After some weeks' illness she began to develop uremic symptoms; the amount of albumin increased considerably; the amount of urea fell to 0.8 per cent; there was a good deal of vomiting and abdominal pain, some diarrhea, and also some bronchitis. A little later headache set in, vomiting became more troublesome, and she began to have fits. Under

treatment the fits subsided, and in the course of a week or so she was in much the same condition as before the fits commenced. As she seemed to be going down hill, renal tablets were administered in the dose of five grains twice a day. Coincidently with this she began to improve; the quantity of urine a few days after the first administration increased and reached forty-seven ounces, the largest amount she had ever passed while under treatment, the usual average being not more than fifteen or twenty ounces. With the increase in the urine the amount of albumin greatly diminished and the edema began to disappear. In the course of a month the urine averaged 1012 specific gravity, forty ounces in amount, and not more than 0.5 per cent of albumin, and soon she was well enough to leave the hospital. Some months later she returned again in a condition of dropsy and chronic uremia. She again took renal tablets with great benefit, and left the hospital well, except for the albuminuria. A third time she was brought to the hospital with uremic convulsions, and died in a few hours.

Dr. West has had two or three other cases of the same kind, and in all the results have been the same, namely, an increase in the amount of urine and an improvement in the general condition. This improvement followed and appeared to be due to the action of the remedy.

The use of renal extracts is still in a purely experimental stage. Judging by the analogy of myxedema, it would be in the cases of chronic renal cachexia only that we should look for striking results, and this requires early and correct diagnosis. In acute uremia there is so little time to act that recourse must be had to other and more active measures.

TREATMENT OF HYPERPYREXIA IN RHEUMATISM.

The *Scottish Medical Journal* for February, 1899, contains an interesting article on this topic by Dr. LANGWILL. The main conclusions he draws from the consideration of the whole subject of hyperpyrexia in rheumatism are these:

1. That the condition is more prone to occur in the warmer months of the year, and apparently with greater frequency in certain years.

2. That while it is very difficult to estimate at all accurately the frequency of its occurrence, probably this is about .5 per cent amongst adult cases of rheumatism.

3. That the occurrence of hyperpyrexia in rheumatism is practically confined to cases of this disease in persons over fourteen years of age.

4. That the rare instances of hyperpyrexia which occur under that age are in cases of rheumatism which present the adult type of the disease.

5. That the absence of hyperpyrexia from rheumatism in children is probably to be explained as the result of the type rheumatism assumes in them rather than a mere question of the age of the sufferer.

6. That males show a much greater proclivity to the condition than females, which may possibly be associated with the greater strain habitually put upon their thermotaxic mechanism.

7. That the condition is most apt to occur in "first attacks" of rheumatism.

8. That persons who have once suffered from the condition would probably be apt to have a recurrence of it in any subsequent attack of the disease (although no case of such recurrence has previously been published).

9. That it may ensue at any stage in an attack of rheumatism, but probably the second week is the most common period of its occurrence.

10. That it may arise in even mild cases of rheumatism, severe rheumatic symptoms being no essential to its occurrence.

11. That the onset of hyperpyrexia, while occasionally without warning, has usually premonitory symptoms, the chief of which is delirium.

12. That cases of true rheumatism showing persistence of the pyrexia, in spite of full doses of the salicyl compounds, should be most carefully watched, since hyperpyrexia frequently ensues in such instances.

13. That sudden cessation of the articular pains without coincident fall of temperature should lead to the suspicion of hyperpyrexia, especially if attended also by the cessation of sweating.

14. That Maclagan's hypothesis that hyperpyrexia is due to paresis of the heat-inhibiting mechanism from exhaustion in its attempt to control the excessive heat-production of rheumatism is the most feasible theory yet put forward in explanation of the condition, satisfactorily accounting for the more frequent occurrence of hyperpyrexia in adults than in children.

15. That the absence of rheumatic hyperpyrexia in children is a strong argument

against the view that this condition is due to visceral complications, since it is especially in children that these visceral manifestations occur, and it is just in those cases that hyperpyrexia is not found.

16. That in view of the resemblance in several respects between rheumatic hyperpyrexia and "diabetic coma," further investigation of this subject might possibly throw fresh light upon the pathogenesis of both conditions.

17. That while the mortality of rheumatism is only about three per cent, hyperpyrexia is probably one of the most important immediate causes of death in this disease.

18. That the mortality of hyperpyretic cases is very high—probably over fifty per cent—but statistics are very variable because

19. The mortality is greater the higher the temperature before treatment is begun; and

20. It is also greater amongst cases treated by means of antipyretic drugs alone.

21. That treatment by the application of cold in one of its various forms is the only justifiable method in cases of hyperpyrexia in rheumatism.

22. That this should be adopted even in cases apparently moribund, and even although visceral complications may be present.

23. That while there may possibly be some risk of congestion of internal organs as a result of this method of treatment, this does not justify the neglect of what is practically the only remedy for an otherwise fatal condition.

24. That the greatest care should be taken to prevent collapse ensuing in the patient as a result of the treatment by cold, which should be stopped entirely before the temperature falls to normal.

25. That antipyretic drugs, while practically useless in the treatment of hyperpyrexia when present, may perhaps be of some service in preventing a recurrence of this after the temperature has once been reduced by means of cold.

26. That in obstinate cases of recurrent hyperpyrexia the method of treatment by "disintoxication of the blood" adopted by Barré may probably be of service as an adjuvant to the treatment by means of cold.

27. That greater attention should be paid to the prophylaxis of rheumatic hyperpyrexia, and that more prominence should be given to the advantage of commencing treatment by cold at an early stage before excessive temperatures are attained; in other words, the general condition of the patient, rather than the mere height of his temperature, should be the determining factor for commencing the treatment by cold.

28. That early and complete subjection of the patient to antirheumatic treatment would probably have some influence in preventing the occurrence of hyperpyrexia.

NOTES ON COCAINE.

JENNEY, of Deadwood, contributes some of his views in regard to cocaine to the *Medical Record* of March 25, 1899, and considers its influence upon the skin at the beginning of his paper. He believes that when an aqueous solution of cocaine is applied to the skin, a portion of the drug is absorbed and a peculiar sensation of coolness pervades the part, and if the action is long continued over a considerable surface the amount absorbed may become so great as to cause in some cases physiological symptoms resembling those described as produced by chewing the leaves of the coca plant. Although the quantity of cocaine so applied to the skin may be many times the maximum dose which may be given internally or hypodermically with safety, no toxic action takes place. The local anesthetic effects peculiar to cocaine are somewhat modified; sensation continues in the surface treated with the solution even after the lapse of twenty to thirty minutes. In the treatment of bruises resulting from a blow or similar cause, the action is most strongly marked; the discoloration and congestion of the tissues are rapidly reduced to the normal color of the skin, evidently by the constriction of the blood-vessels; inflammation and pain subside more gradually, and the pain seldom returns after the anesthetic effect of the drug has ceased. If the *locus* of the pain is near the surface, relief is usually speedy, not infrequently all pain subsiding permanently in three or four minutes; where more deep seated, the action is retarded and less often permanent in its effects. It is then necessary to keep the surface of the body directly over the seat of the pain wet with successive applications of the solution, until ten or more grains of cocaine hydrochlorate has been used. In such cases relief from pain comes very gradually, and may probably be due to the physiological action of the alkaloid through the circulation, rather than to cocaine anesthesia by direct absorption. This view is confirmed by a few instances in which the amount of the drug applied to the skin was from fifteen to twenty

grains, the patient displaying a high state of nervous excitement much resembling the effect produced by an excessive amount of green tea. Respiration was increased and the pupils dilated, without the manifestation of any of the distinctly toxic symptoms of cocaine. It is noteworthy that these physiological symptoms, with the absence of toxic action, are those recorded as resulting from chewing the leaves of the *Erythroxylon Coca*.

The strength of the solution, while somewhat influencing the rate of absorption of the alkaloid by the skin, does not appear to be an important factor. A solution of two to four per cent, or from ten to twenty grains of cocaine hydrochlorate per ounce of water, has been found to give good results. It is best that the solution should be freshly prepared, as it undergoes decomposition in a few days.

The solution may be applied by painting the surface of the skin with a camel's-hair brush, or a cloth, or a thin sheet of absorbent cotton wet with the solution may be placed in direct contact with the skin over the part affected. All absorption ceases if the surface becomes dry, so that it is necessary to paint the spot repeatedly with fresh solution or to wet the cloth with water to replace loss by evaporation due to the heat of the body.

The action varies in some degree with samples of cocaine hydrochlorate of different manufacture; the crystallized drug, put up in sealed bottles, is more rapidly absorbed by the skin than the preparations (which Dr. Jenney has tested) that are sold in bulk.

The therapeutic action of cocaine upon the human skin appears to have escaped the attention of investigators. Most of the standard works on the subject either omit any mention or state that the drug is not absorbed.

Cocaine solution may be employed as above indicated in the treatment of bruises, sprains, and many local inflammations of like character. As a "pain paint" in the quick reduction of bruises, it is doubtful if it has any equal. It may also be used as a preliminary application to reduce inflammation in surgical treatment of dislocations and fractures.

In neuralgia, when the nerve affected is situated near the skin, the local application of a sheet of absorbent cotton saturated with cocaine solution will in some cases give almost immediate relief. It is also worthy of trial in pleurisy, pneumonia, and peritonitis; a gradual palliative action has been observed to take place by prolonged application of a six-per-cent solution, notwithstanding the deep-seated *locus* of the inflammation; the action, in part at least, being probably due to the absorption of the alkaloid into the circulation. In like manner the dull, persistent pain in the lungs in tuberculosis is in some instances alleviated by the repeated application of cocaine to the chest. Small and painful wounds where the skin is practically unbroken may be treated directly with cocaine without danger of too rapid absorption of the drug. In a wound in the foot caused by stepping on a rusty nail, wetting the bandage with cocaine solution reduced the inflammation and quieted the pain, the wound healing with comparatively little suffering to the patient.

Painting with cocaine the marks due to the hypodermic syringe causes them to disappear quickly, from the constringing of the blood-vessels.

Caution should be exercised in the external application of cocaine in cases in which the surface of the skin is not intact, to open wounds, or highly inflamed surfaces, lest absorption of the toxic alkaloids should occur.

The rapid absorption into the circulation of the toxic alkaloids when cocaine is administered internally affords an explanation of the danger incident to the employment of more than the smallest doses administered through the mouth, rectum, or urethra; to the introduction beneath the skin by the hypodermic needle; or to the application of a solution of the drug to any mucous surface.

There are some evidences in the action of a solution of cocaine hydrochlorate when applied to the human skin which indicate that the drug as supplied to the trade may not consist of a simple substance, but of a mixture of at least two alkaloids—one, rapidly absorbed by the skin, is non-poisonous and possesses valuable properties in the reduction of local inflammation and pain; the other, to which is probably due the toxic action, is not absorbed and is left as a residuum on the surface of the skin. In short, it seems that when wet with a dilute solution of cocaine hydrochlorate, the human skin apparently dialyzes the mixed alkaloids, permitting the harmless alkaloid to be absorbed, separating it from the toxic principles. In an experiment a thin sheet of absorbent cotton three inches square was saturated with a six-per-cent solution of cocaine and applied to the skin of the patient for half an hour,

the cotton being kept moistened with water to replace the loss by evaporation. When there was no longer any sensation noticeable from the absorption of the drug, the cotton was washed with water and the washings were evaporated in a watch-glass by steam heat. The residuum was a white, solid substance, having an intensely bitter taste and producing an almost instantaneous sensation of numbness when a small particle was applied to the tongue.

The variable action of cocaine noted by investigators, and the erratic poisonous action, in certain recorded cases of even the smallest doses when administered internally, may be explained by the irregular composition of different samples of the drug; some containing a larger portion of the highly toxic alkaloids, while other preparations have a greater percentage of the non-poisonous alkaloids.

Should the suggestions here put forth respecting the composition of cocaine be confirmed by chemical research, it is not improbable that other animal membranes will be found on experiment to act like the human skin in separating by dialysis the valuable alkaloid from the toxic principle.

There is thus hope that cocaine may be in the future prepared free from all poisonous principles; should this hope be realized, Dr. Jenney suggests that cocaine be retained as the name of the valuable alkaloid, and that lethane be the designation of the toxic element.

THE QUESTION OF INFLATING THE BLADDER WITH AIR PRELIMINARY TO THE BOTTINI OPERATION.

A discussion has been going on among surgeons as to the question which heads this item, and as the matter is of great importance to those who perform this operation we take pleasure in quoting from an article by LEWIS, of St. Louis, in the *Medical Record* of March 25, 1899.

In a discussion of the Bottini operation for senile hypertrophied prostate, held at a meeting of the New York Deutsche Medicinische Gesellschaft, May 2, 1898, Dr. Freudenberg called attention to a feature of the operation that might prove dangerous in certain cases—indeed, that had proved disastrous in one of his own; that is, when the bladder is empty, with its mucous membrane lying in folds, there is liability of the heated platinum blade catching in one of the folds and burning through it, or even through the bladder wall, with peritonitis and death as a result. To obviate this, Dr. Freudenberg recommended that the bladder be at least partially filled with boric acid solution in order to smooth out the membrane and its folds.

In carrying out this suggestion in a subsequent operation on a patient on whom Dr. Lewis had already operated with the bladder empty, he found that the pain was enormously increased—was, indeed, unbearable—whereas in the previous operation on the same patient it had been of small moment. He therefore substituted air as a distending medium, with the effect of reducing the pain to practically nothing. Cocaine anesthesia was used in each instance.

It appeared probable to Dr. Lewis that the superheated boric solution in the neighborhood of the red-hot blade had caused a scalding effect, with the production of the exaggerated pain. From the result of an experiment he was made doubtful of the expediency of this method, even aside from the question of the amount of pain which it might induce. On placing the blade in a cup of water and turning on the electric current, the water would be made to boil, but the blade could not be brought to a red heat, no matter how strong a current was used.

Dr. Freudenberg believes that by causing the incisor to hug the prostate closely, the solution may be excluded from coming in contact with the blade. This Dr. Lewis thinks very doubtful, as the probability is that when the blade is drawn from its niche an opening is made for the ingress of the solution, interfering with the working of the instrument, as well as producing an unnecessary scalding effect.

Dr. Lewis' use of air inflation in connection with this operation was mentioned in the *Medical Record* of November 12, 1898, page 718, and the *Philadelphia Medical Journal* of December 10, 1898. In an able and gratifying report of his cases Dr. W. Meyer, of New York, writes as follows on the subject of inflation: "Lewis, of St. Louis, recently recommended the advisability of filling the bladder with air. One of his patients, on whom he had to operate a second time, maintained that there was no pain whatever after air had been injected into the bladder, while when it had been filled with water previous to the first operation the pain was considerable. I should not, however, indorse vesical inflation with air. The experiments of Lewin and Goldschmidt have shown that, owing to some unforeseen gaping of the ureteral openings, the

air may ascend from the bladder into the pelvis of the kidney and then pass, by way of the renal vein, into the general circulation. Death from an aerial embolism into the pulmonary artery may set in."

On looking up the reports of the experiments of Lewin and Goldschmidt, Dr. Lewis says he found them to be in effect as follows (the conclusions of the authors): "Air, being injected into the bladder (of a dog), in case it ascends into the ureter produces the following effects: The kidney enlarges and turns somewhat on its axis. With a fine, peculiar noise air-bubbles pass from the direction of the kidney hilus into the renal vein. There is noticed a slight vibration; in a short time the blood is forced out and the vessel resembles a round empty tube of frosted ('milch') glass. The bubbles pass into the vena cava, fill it, replacing the blood, and, after a few spasmodic motions of the extremities, the animal dies. On opening the chest, one can see how the heart still works for a time with spasmodic efforts; through its thin anterior walls one can further observe how by the activity of that muscle the blood is churned into foam, intermixed with air as it is. We have clearly established, therefore, a transportation of air from the urinary channels into the blood-vascular system."

Dr. Lewis says, on reading so graphic a description of this remarkable and acrobatic performance, he was staggered. So imminent a peril as this to beset the lives of patients being operated almost daily by Dr. Howard Kelly and his disciples, in the cystoscopy of women; so many undergoing its dangers at the hands of the followers of Dr. Bristow, who advocated the employment of air for vesical distention in ordinary epicystotomy, and whose advice has been accepted in the practice of many prominent surgeons of this country, is difficult to contemplate. He was reassured to some degree, however, by remembering the results of experiments conducted by Dr. H. A. Hare in 1889, in which the old idea of the extreme harmfulness of air in the circulation had apparently been exploded. In these experiments upward of seventy dogs had been subjected to air injections.

From this series of experiments the author deduced the conclusion that "death never occurs from the entrance of air into the ordinary veins of the body unless the quantity be enormous—from one to several pints, a quantity which cannot enter unless deliberately sent in by the surgeon."

However, being desirous of arriving at an unbiased and correct conclusion regarding the vesical inflation question, Dr. Lewis carried out the following experimental steps on a dog. They were done with the assistance of Dr. H. I. Nietert, superintendent of the City Hospital, Dr. R. Amyx, assistant superintendent, and Dr. Greiner, all of whom watched critically the various stages of the procedure, and agreed that no opportunity was overlooked for getting a confirmation of the results of Lewin and Goldschmidt; but, as will be seen, not a particle of evidence in confirmation of them was obtained.

The dog was a half-grown mongrel, weighing about nine pounds. Under chloroform anesthesia the abdomen was opened from symphysis to ensiform cartilage, and the intestines were drawn aside, giving a perfect view of the field of observation. With a rubber bulb syringe the bladder was completely distended with air, after withdrawal of its urinary contents. The penis was ligated, preventing the escape in that direction of the injected air. With the left ureter, kidney, and renal vein plainly exposed to view, firm compression was made on the distended bladder, and continued for fifteen minutes. No distention of kidney pelvis or of ureter ensued. The position of the bladder was changed in various directions, to afford the best opportunity possible for the escape of the air into the ureters, but with the same negative result. Each of the onlookers tried various manipulations of the bladder, but without succeeding in getting the air up into the ureters (both ureters were watched in the maneuvers); and finally sufficient compression was used to rupture the bladder wall, without overcoming the integrity of the vesicoureteral valves.

Next a hypodermic needle was introduced through a ureteral wall, and a syringeful of air was sent toward the kidney pelvis. This latter was distended to a certain degree, which condition was maintained for five minutes or more by compression of the ureter below it. The renal vein was closely observed. Not a bubble appeared in it, nor did it undergo a single change suggestive of inflowing air. The kidney position was changed in several ways, to facilitate the "filtration" of the air through it, but still without result.

In order to make this feature of the experiment satisfying to even the most skeptical, a slit was made in the wall of the ureter, a cannula was introduced through it, and the bulb

syringe (Politzer air-bag), attached to the outer extremity of this latter, enabled them to make forced air-pressure into ureter and hilus, sufficient almost to burst them. This pressure was likewise maintained for ten or more minutes; yet no bubble appeared in the renal veins and no "milk-glass" appearance was assumed by it — in fact, there was no transportation of air from urinary channels to renal or other vascular system. And meanwhile the dog slept serenely.

Next, in order to see what effect would follow if the air should be transferred into the venous system, Dr. Lewis injected three hypodermic syringefuls in rapid succession into a mesenteric vein. The air could be plainly seen to shoot along toward the center, indicated by the displaced blood. The dog showed no disturbance in breathing as a consequence, but slept placidly and continuously for a half-hour thereafter, and was awakened when we killed him with a double dose of chloroform.

From the above there seems little probability that any noxious effect would ensue in a Bottini operation with air inflation, even if there should be "some unforeseen gaping of the ureteral openings." The kidney makes an impermeable barrier against the entrance of air into the circulation from that source; and even if it did not, the injurious effects of such transportation are problematic, to say the least. As Dr. Hare says, whereas there have been numerous cases reported in which sudden death occurred during operations in which veins were opened, in the majority of them the cause of death has been guessed at and not proved as being due to the entrance of air. He asserts that not a single instance has been proved to be due to that cause.

In a recent private communication to Dr. Lewis on the subject under discussion, Dr. Hare writes: "Even if by reason of disease the ureteral valvular protection were removed, it seems incredible that, should the air pass up the pelvis to the kidney, it could enter the renal vein and so get into the general circulation."

But to pass from speculation and experiment to the evidence furnished by the clinic. Dr. Lewis says he wishes to present the testimony of operators in this field. With a view to obtaining this, the following note was recently addressed to several surgeons: "Will you kindly inform me: (1) If you have made use of air inflation of the bladder in connection with epicystotomy or other operative procedure. (2) If you have ever met with any injurious or disastrous effect therefrom. (3) If you have ever heard of any such in the practice of other surgeons (names unnecessary)."

Responses were had from Drs. W. W. Keen, Philadelphia; J. B. Murphy, Chicago; Howard A. Kelly, Baltimore; John H. Brinton, Philadelphia; William T. Belfield, Chicago; J. William White, Philadelphia; John P. Bryson, St. Louis; and Maurice H. Richardson, Boston.

There is such a unanimity of sentiment in these expressions that it is not necessary to quote them separately. In response to the first question there are affirmative answers from five of the gentlemen: "Yes, many times," from Drs. Kelly, Belfield, and Bryson, and simply "Yes" from Drs. Keen and Brinton. The other three gentlemen have not used air inflation. In response to the second and third questions "No" is the unanimous answer. Dr. Lewis says that in the several instances in which he has used air inflation he has seen no indication of trouble of any kind from it, nor has he ever heard of any in the practice of any surgeon.

It seems altogether probable that if vesical inflation had ever given rise to the disastrous consequences feared, it would have come to the knowledge of some of the operators mentioned above, even if it had not occurred in their practice.

From the evidence adduced it would seem unjust, Dr. Lewis believes, to rest an objection to vesical inflation on the ground of possible danger.

THE ETIOLOGY AND TREATMENT OF NEURASTHENIA; AN ANALYSIS OF THREE HUNDRED AND THIRTY-THREE CASES.

COLLINS and PHILLIPS in the *Medical Record* of March 25, 1899, after writing extensively upon this subject, tell us that in their opinion the medicinal treatment of neurasthenia is the least important duty of the physician, though it is oftentimes difficult to convince the patient of this, and physicians as well. Symptom medicines are invaluable to meet certain indications, and disease medicines assist in overcoming certain organic conditions, such as anemia; but despite this the majority of neurasthenic patients would reach the goal of recovery just as surely and speedily if drugs were entirely discarded. At least it may truthfully be said that it is oftentimes as important to forbid the patients all medica-

tion as it is to prescribe it. Neurologists will probably agree that the majority of patients who come to them for advice and treatment, after they have been under treatment by their family physician or desultorily by a number of physicians, are so thoroughly bromidized that this state demands treatment. Dr. Collins does not mean to say that the bromide salts are not oftentimes of signal benefit to relieve certain distressing symptoms, such as head pressure, cardiac palpitation, abdominal fluttering, etc.; but they should never be given continuously, promiscuously, or without special indication. Although the Pharmacopœia contains no drug that has special virtue to "strengthen" the nervous system or to restore its equilibrium when the balance is once disturbed, there are certain drugs which, by creating an appetite, facilitating digestion and assimilation, forcing oxidation and elimination, and by adding to the constituents of the blood, are serviceable when such indications exist. The simple bitters and stomachics can be given for a short time with a considerable confidence that they will cause a greater relish for food. Arsenic, nux vomica, and quinine oftentimes not only create a greater desire for food but seem to have a general tonic effect, particularly upon the muscular system. Cod-liver oil, which is supposed to be of especial service in the treatment of neurasthenia, has no other virtue than to provide an easily digested carbonaceous food.

In anemic individuals suitable preparations of iron and arsenic, alternated or combined with the simple bitters, must be given. In administering iron it should never be forgotten that it has been proven experimentally that the quantity which the blood will take up stands in no relationship to the amount administered. Not infrequently beneficial effects follow repeated inhalation of oxygen. This procedure not only affords a general fillip to the system, but has a desirable mental effect. In the use of arsenic and quinine it is well to bear in mind that the former has a tendency to produce disturbance of the stomach and intestines which may have a very distressing mental effect upon the patient; while the latter, if given in other than very small doses, is sure to produce ringing in the ears and vertigo, which the patient will be likely to interpret as most disastrous manifestations.

The administration of aphrodisiacs in sexual neurasthenia is conceived in error, and should never be tried except for the mental effects. Drugs that make powerful appeal to the mind by insulting one of the special senses—such as valerian, for example, particularly when given with assurance that it will be beneficial—are oftentimes of great comfort to the patient, and thereby useful. Hypnotics are rarely necessary when rest and exercise, hydrotherapy, and massage are properly and faithfully utilized. It is oftentimes necessary to give one of the simpler hypnotics a few times, in order to secure sleep until the physical measures just mentioned have time to become effective. They should be given in sufficiently large doses to make their effect decided, so that the patient may be impressed that a medium is readily at hand that can easily cope with the insomnia.

Reference has already been made to the absurdity of depending upon local treatment alone to cure neurasthenia, whether such treatment be directed to the prostate, the eye muscles, the uterus, or the stomach. All these organs are very liable to reveal considerable disorder of function in neurasthenia, but so does every other tissue or organ of the body in varying degree. They all need treatment, and thus it is that hydriatic procedure, diet, rest, exercise, etc., have proven to be the really trustworthy therapeutic agencies. Occasionally neurasthenia occurs as a result of rectal abscess and fistula, of enlarged prostate, of prolonged and the excessive use of ill-balanced eye muscles. In every such case the effort should be made to rid the patient of these evident infirmities; this is tantamount to saying that the causal treatment of neurasthenia should never be neglected. If such treatment suffices, the patient and the physician have good cause for mutual congratulation. Unfortunately, however, it does not suffice in about ninety per cent of the cases, and it is unwise to neglect the ninety merely to reach the ten.

THE PATHOLOGY OF THE THYROID GLAND.

MURRAY, of England, to whom we owe so much in the study of thyroid therapy, is delivering the Goulstonian Lectures for 1899 and considering the thyroid gland. In *The Lancet* of March 11, 1899, he tells us that in advanced cases of myxedema the first stage of the treatment must be carried out with great caution, especially if any symptoms of degeneration of the cardiac muscle, such as attacks of syncope, dyspnea on exer-

tion, feeble or irregular pulse, or weak heart sounds, are present. Under these circumstances the patient should be confined to bed at first and only small doses of from one-quarter to half a grain of thyroid given each night. This dose if well borne may be gradually increased up to ten minims. If not confined to bed these patients are apt to make use of their returning vigor too soon, before the heart has had time to recover and adapt itself to the altered conditions brought about by the treatment. These advanced cases in which little exercise has been taken for months or even years are now rare, but in the early days of the treatment the importance of this caution was painfully impressed upon Dr. Murray by the deaths of two patients from syncope who had cardiac disease, after they had practically got rid of the symptoms of myxedema. Any undue acceleration of the pulse up to 90 or 100 indicates that a reduction should be made in the dose, and any signs of cardiac failure must be met by giving stimulants and digitalis.

By far the greater number of cases which require treatment are now seen in the early stages of the disease before any cardiac symptoms have developed. In these, the patient is able to go about as usual, though it is advisable to avoid any unusual exertion during the first stage of the treatment. A daily dose of ten minims of thyroid extract may be given each night from the beginning and increased to fifteen minims at the end of a fortnight, if decided improvement has not already taken place. Any marked increase in the frequency of the pulse or rapid loss of weight is an indication for at once reducing the dose. Symptoms of gastrointestinal catarrh have sometimes arisen during this first stage of the treatment, especially if the raw gland has been used. They rarely if ever appear if a suitable preparation of the gland is used instead. If they do occur, the thyroid treatment should be stopped until they have passed away, and then smaller doses should be given, when the treatment is again commenced. In many cases no other treatment beyond the daily dose of thyroid extract is required. When, however, there is a well marked anemia it is a good plan to give iron as well as thyroid extract. Five grains of dried sulphate of iron in a pill twice or thrice daily after meals is a suitable form in which to give it.

As soon as all the symptoms of myxedema have disappeared the first stage of the treatment is completed. The second stage then commences and must of necessity last as long as the patient lives. During this stage the patient must continue steadily to take a daily dose of thyroid extract equivalent to the daily output of the gland before it became diseased, or at any rate of that part of it which has become functionless. It is important that patients should understand this and that good health can only be maintained by the continued use of the remedy. To insure this it is often better to describe the remedy as an essential part of the daily diet and not as a medicine, so as to overcome the objection some persons have to taking what they regard as a medicine for such long periods. Of course an occasional intermission of the treatment for a week or so has little or no effect, but if no thyroid extract is taken for three or four weeks the temperature falls one or two degrees below normal, and the myxedematous swelling of the face begins to develop again. If the extract is omitted for a longer period still all the original symptoms gradually reappear, till at the end of three or four months the condition will be much the same as it was before any treatment was adopted. The most suitable dose for the second stage of the treatment is, generally speaking, ten minims of the extract given once a day. If after a time any slight symptoms of myxedema reappear, the permanent dose should be increased to twelve or fifteen minims. In none of Dr. Murray's cases has it been necessary to give more than ten minims; in a few cases this dose is too large, as after a time it produces acceleration of the pulse. The permanent dose has then to be fixed at five or seven minims a day.

In doubtful cases of myxedema thyroid extract may be given as a means of diagnosis. For this purpose a dose of ten minims should be given daily for three or four weeks. If the symptoms steadily diminish they are the result of thyroidal disease; if, on the other hand, no improvement takes place they are due to some other cause. This test is of great use in distinguishing some of the cases with anemia and subcutaneous swelling from cases of anemia with ordinary obesity, which they often closely resemble.

When the treatment of a well marked case of myxedema is carried out on the lines just indicated, very definite and interesting results are soon obtained. One of the earliest signs of improvement is in the return of the temperature to the normal level. This is illus-

trated by one case, in which the temperature before treatment ranged from 95° to 96° F., whereas during the second, third, and fourth weeks of treatment it varied between 96° and 98°. As the temperature rises to normal the former sensitiveness to cold is lost and the frequency of the pulse increased. The most striking changes are those which take place in the skin with its appendages and in the subcutaneous tissues. The myxedematous swelling gradually disappears from all parts of the body, so that the face and hands once more assume their natural appearance, and the free movement of the limbs, which has been considerably hampered by the swelling, is regained. The reduction of the swelling is accompanied by a loss of weight which may amount to as much as two or even four stones. The skin, which as a result of the removal of the swelling may for a time remain loose and wrinkled, becomes warm and moist owing to the renewal of the secretory activity of the sebaceous and sweat glands. Not infrequently there is some desquamation, which may occur in fine scales or in large flakes from the palms of the hands and soles of the feet, as observed by Byrom Bramwell. The hair follicles resume their proper function, so that even where there has been complete baldness a good growth of hair is developed in the course of six or twelve months. The feeling of lassitude passes away, and as a result of this those who before treatment could barely walk a mile are enabled to walk long distances, climb mountains, and undertake various other forms of exercise. Mental processes become more active, the memory improves, and the hallucinations disappear. In some cases in which actual insanity had occurred, it has also been cured. If albuminuria without actual renal disease has been present it disappears, while the amount of urine is increased. The observations of Ord and White show that the total amount of nitrogen eliminated is increased and that this increase is almost entirely due to the increase of urea in the urine. At first the amount of urea excreted may not only equal but actually exceed the normal average quantity. The number of red corpuscles in the blood increases. In patients who have not reached the menopause menstruation returns and takes place regularly even when there has been amenorrhea for several years. In fact, the myxedema is entirely cured, though the fibrosis of the thyroid gland remains unaffected by the treatment.

TREATMENT OF CRETINISM.

We have already quoted from MURRAY'S lecture in *The Lancet* of March 11, 1899, upon the thyroid gland. The results of athyroidism in young animals and children are more serious than in the adult owing to the arrest of development. The treatment of a cretin consequently presents a more formidable task, but the results are in some respects even more interesting than those just described in myxedema. Murray again points out the importance of carefully considering the possibility of the presence of disease or lack of development of the thyroid gland in every case of arrest or delay of development in children. In all such cases it is important to look for slight signs of cretinism. There are of course other causes of arrest of growth, such as achondroplasia, but Dr. Murray has seen several cases where the ordinary symptoms of cretinism were not distinct and might easily escape observation if not searched for carefully, in which the rapid improvement following thyroid treatment has proved that the arrest of development was due to thyroidal insufficiency. The importance of early diagnosis in such cases lies in the fact that the earlier the treatment is commenced the better prospect there is of normal development of the central nervous system. Experience has already shown that in cretinism of some years' duration, rapid as the improvement in the physical condition may be, the intellectual development is much slower, so that when treatment is commenced late it is doubtful if the latter will ever advance as far as when treatment is started early. If any doubt exists as to the diagnosis it is a good plan to carry out the treatment for one or two months. If no distinct improvement takes place the want of development is not due to cretinism, for in other forms of arrested growth the treatment has comparatively little effect, though it is worthy of trial.

The treatment of early cretinism is carried out on the same lines as the treatment of myxedema in the adult. During the first stage gradually increasing doses of thyroid extract are given till the symptoms disappear. It is advisable in treating a small cretin to begin with a dose of one or two minims each evening, gradually increased by the addition of one minim each week or fortnight until a dose of five, seven, or ten minims, according to the size of the child, is reached. As the child gets older it may be found necessary to increase the daily dose

from time to time by the addition of another minim. If too large doses are given the pulse becomes too frequent, pains may be felt in the limbs and elsewhere, the temperature may rise above the normal level, and purging may follow. As in the adult, the treatment must be continued as long as the patient lives. As soon as the symptoms have disappeared it is only necessary to determine the most suitable permanent dose and to insure its uninterrupted administration.

In the treatment of cretinism which has lasted for some years we have a much more difficult task to perform, but very good results can be obtained. Even when the disease has lasted ten or twelve years, provided the patient is not more than eighteen or twenty years old, a remarkable amount of growth can still take place. In these cases from three to five minims of thyroid extract may be given at the commencement and increased according to the progress observed. Even in cases in which the symptoms had lasted for twenty or twenty-five years some growth and marked improvement in all the symptoms take place. In cases of long duration attacks of syncope are not uncommon. In such the earlier part of the treatment is more safely accomplished by keeping the patient in bed and giving small doses of one or two minims only at first.

When the necessary stimulus to the normal metabolism of growth is thus supplied to a cretin in the early stages of the disease the symptoms disappear. The swelling gradually diminishes in all parts of the body. The tongue, lips, and nose diminish in size, so that the appearance becomes natural. The skin becomes soft and moist and the temperature rises to normal. Growth, which at this early stage will only have been partially arrested, starts afresh. If the treatment is continuously carried on in such a case from the earliest time in which the disease is recognizable there seems no reason to doubt that ultimately the child will grow up into a fully developed healthy adult, who, however, would of course at any time develop symptoms of myxedema if his supply of the extract was discontinued. The intellectual development is always much slower than the bodily growth and general improvement in all other respects. The shorter the duration of the symptoms has been at the commencement of the treatment the more rapid the improvement in the mental condition, and Dr. Murray thinks it is only in cases in which the treatment is started early that we can expect normal intellectual development to take place. In cases of some duration it is important that a special education should be carried on at the same time as the treatment, in order that the patient may be able to make the most of the renewed cerebral activity.

THE TREATMENT OF OZENA WITH SPECIAL REFERENCE TO CUPRIC ELECTROLYSIS.

M'BRIDE writes in the *Edinburgh Medical Journal* for March, 1899, upon this novel theme.

According to Moure, Garrigou Désarènes was the first author who proposed the employment of electrolysis. He, however, applied only one pole to the surface of the nasal mucosa, while the other rested upon the neck or some other indifferent part. His method was followed in a more or less modified manner by Delavan, of New York. Then Jouslain suggested interstitial cupric electrolysis, in an article which unfortunately has not been accessible to Dr. M'Bride, but which Moure states was communicated to a French scientific society in 1892. This method of treatment was not apparently referred to again until 1895. Cheval then described it, and at the same time recorded ninety per cent of cures, and in seventy of his cases attained this result after a single séance. His paper was communicated to the Society of Belgian Laryngologists and Otologists, and later this body appointed a committee of four to inquire into the effects of cupric electrolysis. Seven cases were treated by Cheval, and in none of them could the members find any improvement. In 1896 Bayer gave a long account of the method and its results, which, according to him, were extremely good in a large proportion of cases. During the following year Réthi expressed the opinion that the benefits obtained from cupric electrolysis were greater than those derived from any other method of treatment.

Brindel, at the suggestion of Moure, undertook the treatment of thirty cases in the clinic of the latter. He found that in every instance the nasal affection was modified for some days; the mucosa became swollen, red, and congested; the yellowish-green thick crusts no longer formed on the side operated upon, but in their place sticky mucus, sometimes tinged with blood, was found, while fetor disappeared. Brindel, however, observed that relapses often occurred after from one to eight weeks. Nevertheless, in ten cases

permanent benefit followed the treatment. In none of these, at the time of writing, were there either crusts or odor, the patients having been under observation from three to eleven months.

The latest work upon cupric electrolysis with which Dr. M'Bride is acquainted emanates from Gouguenheim and Lombard, who arrive at the conclusion that cupric electrolysis has a definite action on ozena, causing disappearance of fetor, but that it is not possible to say that the result will be permanent.

Dr. M'Bride says he does not think that cupric electrolysis has yet been touched upon in English literature, and with one exception its use seems to have been, so far, confined to Belgium and France. Struck by the preponderance of favorable evidence, he began to experiment with this treatment in 1897, and gives his results briefly.

The strength of current used varied from three to ten milliamperes, rarely exceeding the latter. Cocaine was used in most if not in all cases, and after cleansing the nostrils the copper needle attached to the positive pole was inserted into the inferior or middle turbinate, sometimes into the tissues lining the middle meatus, while the platinum (or steel) needle was passed into the septum. Usually the patients complained of little pain, nor did they experience disagreeable after-effects. A private patient on whom Dr. M'Bride recently performed electrolysis, however, suffered a good deal from neuralgia, swelling of the eye, and general disturbance for a day or two. As a rule, each sitting lasted about ten minutes. As he has stated before, the cases quoted were not selected by him, but it is just possible, nevertheless, that a process of natural selection may have been brought about. They all occurred in out-patients, and it is quite conceivable that the majority of those who were benefited repeatedly presented themselves, while there may have been an opposite tendency on the part of those who received little relief. It will be noted that out of the eight patients whose histories he gives briefly four were practically cured for long periods, extending to eighteen months. In one there was marked improvement; in another case apparent cure for some months, but then syringing had to be resumed; while in two cases there was only improvement for a few weeks. The former was shown to the audience, and Dr. M'Bride thinks that the fetor has been practically cured, but the patient complains of the discomfort caused by crusts accumulating in the nasopharynx and larynx.

In the last sentence, when Dr. M'Bride uses the term "cure," he says he refers to the fetor, for in most of the cases the atrophy remained as before. He is quite prepared to admit, as above stated, that the results achieved in these seven cases may have been beyond what we can reasonably expect to average. Still they prove that in cupric electrolysis we have a valuable therapeutic resource, probably the most valuable that has yet been suggested, for ozena. The rationale of the treatment is still uncertain, but probably the formation of copper salts at the positive pole has at least as much effect as the electric current.

THE OUTLINE TREATMENT OF MIGRAINE.

In *La Presse Médicale* of February 11, 1899, GALLOIS stated that in gouty migraine depending upon uric acid he believes that the constant use of large doses of bicarbonate of sodium is advisable, and directs the patient to take a saltspoonful of bicarbonate of sodium in each quart of water, which quantity shall be taken in each twenty-four hours. He states that three cases of inveterate migraine have been treated in this manner with excellent results.

WHAT TO DO AND WHAT NOT TO DO IN THE TREATMENT OF CERTAIN OF THE MOST FREQUENT EAR AFFECTIONS.

We have already abstracted part of an article with this title, by HAUG, which is published in the *Eye, Ear, and Throat Journal* for January, 1899. He further tells us that atresia of the meatus may occur in injuries or ulceration of its walls and especially after burns. In such cases strips of gauze must be introduced into the meatus past the seat of the lesion, after previous moist or dry cleaning of the meatus. These are much more effective than perforated drainage-tubes and supplant mechanical dilators, tents, etc.

Eczema may cause agglutination and eventually atresia. This is best prevented, and the eczema at the same time treated, by strips of gauze impregnated with ointment (diachylon ointment, oleo cocti, zinc ointment, equal parts). Even when nearly well the tamponade must be continued either dry or after painting with

℞ Naphthol B, 0.1;
Acid salicyl., 0.5;
Alcohol, 35.0;
Glycerin, 15.0.

until the skin is smooth and scales have disappeared.

The air-douche and its proper performance will now receive our consideration.

First, it cannot be too urgently insisted upon that all the instruments that are used (catheters, nasal olives, etc.) should be sterilized, to avoid syphilitic or other infection. As to the air-douche itself, there is no doubt that in it, whether carried out by the simple Valsalva procedure, by Politzer's method, or by the catheter, we have one of the best means of improving and curing a large portion of the defects of the hearing apparatus which depend upon a disturbance of the middle ear. On account of their easy accomplishment, Valsalva's and Politzer's procedures have become the property of the laity. Catheterization requires a certain skilfulness which is usually confined to the physician. While it is probably in itself a matter of congratulation that a good method of treatment should find universal extension, still the abuse of this method may provoke the danger either of making the disease worse or of producing such a one; while capable of the greatest good, still, if used at the wrong time and place, the air-douche can cause endless injury.

Not long since it was the fashion on the part of the practitioner and even the specialist to "air-douche" every variety of ear disease, and the patient soon learned to treat himself by Valsalva's and Politzer's methods.

In this connection two questions arise:

1. Can the air-douche under certain circumstances work injury?

2. When can and ought we to apply the air-douche for the relief of existent affections of the hearing?

The first question must be answered with a "yes." In accord with physical laws and following the path of least resistance, whenever air is compressed in the nasopharynx it extends through the Eustachian tubes into the middle ear. Unfortunately, not air alone, but at the same time a portion of the contents of nasopharynx, mucus, secretions, and accidental dirt is carried along.

Dr. Haug has had the opportunity to observe a case in which an acute middle-ear inflammation was caused by snuff, as a result of sneezing, and particles of snuff were extracted through the incision in the drumhead. More important for us is the fact that many of the microorganisms which are found in the normal oro-nasopharynx, and are the most exquisite provokers of infectious disease, may be carried along the same path and set up an inflammation, especially when the nasal mucus has lost its bactericidal properties from pathological processes.

This latter condition is necessary, otherwise in spite of the presence of pathogenic organisms no disease will occur. We well know that as a result of the removal of the protective apparatus, as, for instance, paralysis of the ciliated epithelium of the upper respiratory tract from a sudden cold, etc., an infection of the general organism may occur; we know, indeed, that the greater part of the acute general infections do thus occur. Therefore, we are not surprised that the largest portion of the acute inflammations of the ear occur by the way of tubal infection—infection through the blood-stream, as well as infection from without through the external meatus, are far less frequent. "An ounce of prevention is worth a pound of cure." Having established the fact that infection of the ear can readily occur from the nasopharynx by continuity or contiguity, we should direct all our efforts to prevent this eventuality.

Therefore it is our task to warn our patients against voluntary air-condensation in every acute catarrh, every angina, whether exclusively local or the expression of a general infection. Caution should be exercised in blowing the nose. Never blow the nose with closed mouth or both nostrils closed. Von Tröltsch advises the countryman's method.

We now come to the proper consideration of the therapeutic employment or non-employment of the air-douche. Haug first must speak of the acute middle-ear inflammations. These processes are associated with more or less marked reduction of hearing power, and since we know that such disturbances are often relatively easily improved by the air-douche, its employment follows quite logically. This was formerly the custom of almost all ear doctors, and is still so to some extent.

May the air-douche be employed in the acute catarrhal or acute purulent middle-ear inflammations? No, repeatedly no! The commonest general surgical principle contraindicates this procedure. "Every inflamed organ should have rest."

PREVENTIVE TREATMENT OF HEREDITARY SYPHILIS.

FOURNIER (*La Semaine Médicale*, Nov. 30, 1898) discusses this question: In the event of pregnancy when the father is syphilitic at the stage when the disease may be transmitted, and when the mother is healthy, can medical art intervene to safeguard the child; and, if so, what is the means to be adopted? He considers two classes of cases: (1) when the pregnancy is the first one, supervening shortly after marriage; (2) when several previous pregnancies have resulted disastrously in abortion or in early death of the child. He maintains that the child can be safeguarded by antisyphilitic treatment of the mother, even when she is healthy. He claims that this treatment is rational, effective for the child, and free from danger to the mother. It is rational, because Porak's experiments have demonstrated that the fetus *in utero* can be reached by drugs through the placenta. Within forty minutes of the administration of iodide of potassium to the mother Porak found the drug in the urine of the fetus. It is safe for the mother, as demonstrated by wide experience. He quotes Pinard to the effect that he had not yet come across a case where the mother had suffered. As to the efficacy of the treatment, he does not claim that it will invariably save the child either from death or from syphilis. But that it is a safeguard in the great majority of cases is shown by the results, both with first children when the mother is healthy and the father had syphilis in a transmissible stage at the time of marriage, and also when several preceding pregnancies had resulted disastrously. He recites several cases illustrating this point. Even though cases occur with no good results, he maintains that the attempt should be made; to do nothing is to run the risk of doing harm by compromising the child's health; to intervene is to run the risk of doing no good, and it is better to act uselessly than harmfully. The cardinal points of treatment are that it should be begun as soon as possible after the onset of pregnancy, and that mercury is the best drug to administer. It is much superior to iodide of potassium in the prevention of hereditary syphilis; but if the iodide is given in conjunction with mercury, all the better. Inasmuch as it is not an adult but the fetus that is being treated, small doses should be given. The treatment should be continued during the whole time of pregnancy. As to the particular form in which the mercury is given, and as to whether it be given continuously or intermittently, these matters the author thinks may be left to individual discretion and to the idiosyncrasy of the patient. — *British Medical Journal*, Feb. 25, 1899.

IODINE IN THE TISSUES AFTER THE ADMINISTRATION OF POTASSIUM IODIDE.

An abstract of a paper on this topic appears in the *American Journal of Physiology* for March, 1899. In it P. A. LEVENE points out that during the last few years there have been found in various organisms a number of normal tissue constituents containing iodine, as iodocarnein, iodokeratin, iodospongin, iodoproteid, iodofat. Some of these bodies can be obtained synthetically without great difficulty. It was the aim of the author to investigate the tissues of the higher animals as to their power of binding iodine intramolecularly.

For this study hens were employed, since in them the chemical changes of at least one tissue could be followed from day to day. The eggs were examined from time to time during ten weeks, at the end of which period the other tissues were analyzed. During the first three weeks the author found iodine only in the form of potassium or sodium iodide. Beginning with the fourth week the iodine appeared as an organic compound, apparently as iodofat. Of the other tissues or organs, the following were examined: nervous tissues, muscular tissues, glandular organs, gastrointestinal tract, skin, and adipose tissue. In none of them could any appreciable amount of organic iodine be detected with the exception of the bones, where a noticeable quantity of iodofat was present.

Comparing these results with all that is known on the subject, the author comes to the conclusion that only certain keratins, such as that of the hair, are capable of binding iodine in the organism; only certain proteids, such us that of the thyroid gland, have the same faculty; and only certain fats act in the same way. Whether this result depends on the peculiar chemical composition of those compounds or on a peculiar activity of the different organs or organisms the author will endeavor to solve.

INJECTIONS OF NORMAL SALINE SOLUTION IN DIABETIC COMA.

ROGET and BALVAY (*Lyon Médicale*, Jan. 8 and 15, 1899) report the following case: A

man aged twenty was admitted to hospital on June 3, 1898. He had had syphilis and ague, and was addicted to alcohol. Five years before he had remained unconscious for some time after a blow on the head. On July 2 he had several epileptiform fits. Though anasarca was present, there was no discoverable cardiac or renal lesion. The urine contained a quantity of sugar. On July 23 he had a fit, with deviation of the head and eyes to the left, and clonic spasm in the face, chiefly on the left side. On August 1 the edema of the legs extended to the thighs. There was slight left facial paralysis, and the knee-jerks absent. On August 2 complete coma with epileptiform convulsions came on. Urine was scanty and had to be drawn off by a catheter. He was then treated with injections of normal saline solution, and received in all, between August 4 and 9, nearly fourteen pints, three and a half of which was introduced directly into the veins, and the rest subcutaneously. Besides this he had three enemata containing 17½ fluidounces each. By these means free diuresis was established, and the kidneys being sound the poisons were probably flushed out through them. As soon as consciousness returned he ate with avidity, and swallowed large amounts of alkaline water, containing in all nearly 1½ ounces of sodium carbonate, which doubtless aided the process. On August 16 his condition was as good as it was before the coma appeared. He lived four months and then died of empyema and phthisis. Post mortem the pancreas was found to be partially absent. Towards the end there was pus in the urine, and calculi were found in the pelvis of the kidney, whose substance was found on microscopical examination to be perfectly healthy. The condition of the brain is not noted.

The authors have been able to collect nineteen cases of diabetic coma treated by saline injections, mostly published in Germany and England; of these only one, a case of Lépine's, recovered from the coma, but few or none appeared to have received such copious injections.

SUPRARENAL GLAND EXTRACT AS A HEMOSTATIC.

The *British Medical Journal* of February 25, 1899, contains an article by LERMITTE upon the use of suprarenal gland.

In 1896 Dor, and subsequently Darier, made use of an extract of suprarenal gland in ophthalmic practice. Their object was to reduce hyperemia of the conjunctiva in cases where operation was urgent, but in which, owing to local congestion, it was difficult to obtain anesthesia with cocaine alone. Marked success attended these trials, and suggested its further employment in cases of conjunctivitis, keratitis, and iritis. It was found that a single drop of a watery extract was sufficient to render the bulbar conjunctiva anemic, and under its use, in conjunction with cocaine, iridectomies were performed.

In 1897 Velich confirmed these statements, and affirmed that a watery extract, when dropped into the eye, caused a marked vascular constriction, and so relieved conjunctival hyperemia, however caused. Velich also investigated the action of the suprarenal extract on the vessels lying under the unbroken skin, and found that the normal pink color quickly disappeared under its application. The same vasoconstrictor action was noticed when the extract was applied to eczematous skin, nævi, and even sarcomata.

In 1898 J. A. Mullen reported the results he had obtained from the use of suprarenal extract in nasal surgery. He, like his predecessors, made use of it for the purpose of operation only, and claimed for it that it not only prevented primary but also secondary hemorrhage, and increased the anesthetic effect of cocaine to so marked a degree that the cautery could be carried down to the periosteum with the greatest confidence.

In the light of these results Dr. Lermitte determined to endeavor to carry the investigations into the hemostatic qualities of suprarenal gland a step further, and to widen the scope of its utility by treating actual hemorrhage with it. A suitable case for this purpose presented itself early in August of last year.

The patient, a boy aged six, was brought to Dr. Lermitte with the following history: He had a severe attack of diphtheria in 1894, and during the stage of convalescence had repeated attacks of epistaxis. These had persisted up to that time in spite of every form of treatment adopted. The treatment had been entirely constitutional, not local. For one year before Dr. Lermitte saw him he had been taking a mixture containing potassium chlorate three grains and tincture of iron chloride five minims, three times a day, with more or less persistence, but without any effect in diminishing the bleeding from the nose. These attacks of hemorrhage occurred at all hours of the day and night, often without apparent cause, but sometimes

they followed on any unusual exertion. The attacks varied in intensity and duration, often lasted a considerable time (an hour or longer), and the loss of blood was always great. At times he would have three or four attacks on three successive days, and then would follow an interval of a fortnight without an attack. On the whole, they averaged three or four a week. During the attacks the child was laid prone, and cold compresses, generally of vinegar and water, applied to the forehead.

On examination of the nasal cavities the only abnormality present was a dilated and angiomatous condition of the vessels. The site of the hemorrhage could not be detected. Constitutionally the boy was in a weak state and had enlarged glands in the neck and right groin, probably tuberculous. The lungs, heart, and kidneys (urine normal) were apparently healthy.

At first Dr. Lermitte ordered a nasal douche containing liquid extract of hamamelis, to be given every night and morning. This was continued for one month without success. On September 17, 1898, he commenced treating the nose locally by inserting into each nostril a pledget of cotton-wool soaked in a five-per-cent solution of cocaine and leaving them *in situ* for five minutes. On withdrawing these similar pledgets soaked in a saturated solution of boric acid containing five grains of dried extract of suprarenal gland to the ounce were inserted and left in for the same length of time. These applications were made on alternate days till October 7 (three weeks), then on every third day till October 31 (three weeks), and afterwards on every fourth day up to November 22; making in all twenty-four applications.

The immediate result on the nasal mucous membrane was to produce a condition of ischemia, and the effect on the epistaxis was to cause its cessation. Up to the time of writing there have been no attacks of hemorrhage since the first application was made.

That there was no hemorrhagic diathesis present, Dr. Lermitte says he had occasion to prove on November 28, when he removed the enlarged cervical glands. There was nothing more than a very moderate amount of bleeding at the time of the operation and no subsequent oozing, the scar having healed perfectly by the sixth day.

The author hastens to report this case in the hope that others may be induced to use suprarenal gland extract in the treatment of hemorrhage due to various causes, as he says he is led to the conclusion that in this, one of the latest additions to our armamentaria derived from the animal kingdom, we possess a very powerful hemostatic whose use, unlike some others, is attended by no unpleasant effects either at the time of its application or subsequently.

THE "LANCET" AND QUININE IN MALARIA.

In a special article upon this subject the *Medical News* of March 4, 1899, again returns to the question which we have so often discussed in the THERAPEUTIC GAZETTE in editorials, articles, and progress items. We quote the article simply to present both sides of the matter, willing to let it rest with the profession:

"The London *Lancet* of February 4, before it had seen our answer, we suspect, comments approvingly on Dr. Hare's criticism in the *Medical Record* of our position with regard to the use of quinine in malaria, and especially as to its use in blackwater fever, malarial hematuria, or hemoglobinuria. *The Lancet* considers that Dr. Hare is very sensible in echoing the caution which Koch has lately given with regard to the use of quinine in malarial hematuria, 'a caution, indeed, which had been given before by many writers in America, and especially by many physicians in the States.'

"Our views on the subject have aroused a good deal more attention than we anticipated. We do not pretend to any profound knowledge of the subject gathered from our personal experience. We stated practical conclusions for the benefit of the general practitioner based on the opinions of thoroughly conservative experts in the treatment of malaria.

"We shall now quote more fully the authorities substantiating our position, and ask a candid judgment as to whether it is not the only position possible for an unprejudiced medical editor to hold. Osler in the last edition of his 'Text-book' adds to his article on malaria the following clearly expressive paragraph, which was evidently penned after consideration of the articles called forth by Koch's declarations regarding his experience in South Africa: 'An interesting question is much discussed whether quinine does not cause or at any rate aggravate the hemoglobinuria. We have not yet seen a case in which this condition has occurred as a result of the use of the drug. It seems localized in certain sections, and Bastianelli states that

it is not seen in the Roman malarial fevers. He recommends that in any case of hemoglobinuria if the blood shows parasites quinine should be administered freely. In the postmalarial forms quinine aggravates the attack. In the active malarial infection the patient runs less risk with the quinine.'

"In *The Lancet* of December 24 there is the discussion of a case of malarial hemoglobinuria before the Pathological Society of London. Dr. W. H. Crosse says of his patient: 'In spite of his improving under quinine he had a slight relapse of the hemoglobinuria, which disappeared while he was having still larger doses of quinine.' Dr. Crosse was until recently the chief medical officer to the Royal Niger Company of Central Africa. He has had an extensive experience with malarial hemoglobinuria, including a number of attacks of the disease himself. He discussed this subject at the opening of the medical session at Guy's Hospital last fall (see *British Medical Journal*) and completely disagreed with Koch. He attributes his own attacks of malaria to his failing to take quinine. He tells the story of a friend who foolishly decided against the use of quinine and suffered a very severe attack, from which he was saved only by the free use of quinine. He insists that his friends going to Central and South Africa shall have no foolish notions with regard to any possible harm produced by quinine during the course of the affection.

"Dr. Moffat, principal medical officer of the Uganda Principality, writes to the *British Medical Journal* of September 24 as follows: 'Prof. Koch may be right when he says that quinine poisoning causes hemoglobinuria. I do not possess sufficient knowledge to criticize that statement. This much I will say, that after seven years in eastern equatorial Africa, during which time I have treated many hundreds of cases of malaria, I have never seen a man die of fever when quinine was given properly and early in the case. The fatal cases, whether complicated with hemoglobinuria or not, have all been those in which for some reason quinine was not administered, or was given in very small doses, or else resorted to only when the case was practically hopeless. Out of nine cases of blackwater fever which I have had two were fatal; in both the administration of quinine was neglected until too late. All the cases which recovered were treated with heroic doses of quinine, with one exception. In this one case thirty grains of quinine was given in the twenty-four hours, and the attack lasted for days, the hemoglobinuria subsiding gradually. In the other cases 60 to 120 grains in the twenty-four hours was given, and the hemoglobinuria only lasted from twenty-four to thirty-six hours, stopping quite abruptly.'

"Laveran in the last edition of his book on 'Paludism' says: 'It is always necessary to resort to quinine for the treatment of acute paludism when we wish to break up the fever, and especially in grave cases.' Further on he continues: 'The rarity of quinine hemoglobinuria shows that an individual predisposition is necessary for it. Malaria is only an accessory (adjuvant) cause. Sulphate of cinchonidine does not give rise to hemoglobinuria, according to Pampoukis, and ought to be substituted for quinine in patients liable to it.' Laveran, it may be seen, does not feel able, even in patients with an idiosyncrasy, to advise a radical departure from cinchona-bark treatment in some form.

"Next we come to the question of the influence of quinine on the kidneys. *The Lancet* quotes with approval Professor Hare as saying that according to writers of experience quinine in full doses has similar effects (nephritis, fatal malarial hematuria, and glomerulitis have been mentioned just above, and to all, or at least to some, of these the reference is made): 'These effects are brought about by quinine producing renal congestion and inflammation.' We should like to know some reliable authorities for this startling statement of *The Lancet*. If full doses of quinine produce renal inflammation, Italy would be overrun with nephritis. So would all the malarial countries. The fact is that nephritis is no more frequent in malarial countries where quinine is used freely than it is elsewhere. Hirsch, the medical geographer, made a special study of this subject years ago, and his conclusions have never been contradicted. *The Lancet*, unwarrantably it would seem, is lending the weight of its authority to an opinion liable to do a good deal of harm when it states that quinine in therapeutic doses ever produces nephritis except in the rare cases in which idiosyncrasy exists.

"Laveran discusses in his book (before mentioned) the complications to which the use of the salts of quinine may give rise. He mentions toxic symptoms, hemoglobinuria, icterohematuria, cutaneous eruptions, visual and auditory phenomena, and oxytocic properties, but says not a word of nephritis. Rem

Picci, who made a study of nephritis complicating malaria in Rome, and who has collected the statistics of over 7000 cases of malaria that occurred in the Roman hospitals during the last four years, said in *Il Policlinico* last year: 'The treatment of the kidney affection (of malaria) is the same as that of malaria itself. Quinine, which according to some authors causes albuminuria and hemoglobinuria, is not contraindicated, but on the contrary is indispensable. These symptoms occur with or after the malarial paroxysm and before the employment of quinine; they get worse with every new attack, and disappear with the malaria itself after the energetic use of quinine.'

"We sincerely hope, then, that the omniscient editor who sits up aloft in *The Lancet* offices and dictates, without quoting his authorities, *ex cathedra* conservative opinions to an inexperienced medical public, will let us share in the special illumination on this subject vouchsafed to him. The subject is an extremely interesting and important one. Let us have the facts and the figures to demonstrate why we should hesitate to use full therapeutic doses of quinine whenever there is active malaria despite the presence of nephritis, of albuminuria, or of hemoglobinuria. As far as our researches into the literature of the subject go, the authorities, who speak from experience, are on the other side."

THE RESULTS OF 360 OPERATIONS FOR GALL-STONES, WITH SPECIAL REFERENCE TO 151 PERFORMED DURING THE PAST TWO YEARS.

The operations comprise all or nearly all that can be imagined in connection with gall-stones. The mortality of the operation in simple uncomplicated cases was 3.8 per cent. The writer advises early operation before the gall-stones have been forced into the deeper bile passage. In the earlier periods the operation is less dangerous and also less difficult than when the choledochus has to be opened. When symptoms of obstruction of the passages are present, he proceeds to operate unless evidence is present of the re-establishment of permeability of the duct. Cure of the cholelithiasis by internal remedies the author looks upon as one of the rarest of events. Development of carcinoma he considers one of the dangers to be feared in cases of long-continued irritation from gall-stones. The normal procedure is cholecystectomy, and although with this recurrence is possible, he has never seen it. Cholecystectomy is a more radical operation, but it is also more difficult and more dangerous. Ideal cholecystectomy can only be exceptionally performed; a free drainage of the gall-bladder is the surest means of overcoming the catarrh that so often exists.—*Medical Press and Circular*, March 8, 1899.

THE TREATMENT OF UREMIA BY INJECTIONS OF SERUM IN THE RENAL VEIN.

The *Medical Press* tells us that at the last meeting of the Lyons Medical Society DE LIGNEROLLES gave an interesting account of his treatment of uremia by injections of serum into the renal veins. The kidney, he said, possesses an internal secretion which it pours into the organism by means of its efferent vessels. The importance of the antitoxic rôle of that secretion against hurtful substances that the kidney could not eliminate had been demonstrated by numerous experiments and by clinical facts. To remedy that renal insufficiency Brown-Séquard, Meyer, Ajello, and Parascandalo injected in animals deprived of their renal organs the diluted juice of kidney extract; they obtained in uremic troubles very favorable results, which confirmed the clinical observations of Dieulafoy, Teiddier, Donovan, and others. But "would it not be better," asked Brown-Séquard, "to employ the venous blood of different parts of the organism than the extracted juice of these parts? The venous blood coming from an organ contains, in fact, the principles of the internal secretion special to that organ."

This conception, which had already guided Meyer in his experiments on the periodic respiration of Cheyne-Stokes, had been realized by Professor Vitzou, of Bucharest. The remarkable cases of prolonging life which he obtained in animals from which the kidneys had been removed, by injections of defibrinated renal venous blood, encouraged Dr. Turbure to treat in the same way patients suffering from uremia. Under the inspiration of Professor Teissier, the speaker made a special experimental study of the treatment at the hospital.

The blood of the renal vein of a young healthy goat was drawn under perfectly aseptic conditions, and its serum decanted into six-drachm bottles. The toxic properties of the serum were insignificant, especially when

the liquid was injected into the subcutaneous cellular tissue.

The cases he presented to the Society were not numerous on account of want of time, but such as they were they merited attention, not only on account of the novelty of the method, but also, and what was more important, by the constancy of the results obtained. The first case was that of acute nephritis complicated with uremia. The patient, a boy of fifteen, entered the hospital suffering from anasarca, the result of scarlatina. The urine contained a large quantity of albumin, leucocytes, and cylinders. Vomiting was persistent. The symptoms became so grave that an injection of six drachms of the serum was made in the right flank. The following morning the improvement was considerable; the violent headache had subsided, as well as the vomiting, and four days afterward the edema had disappeared, while the urine, scanty before the injection, returned with great abundance. All trace of the albumin had disappeared at the end of a fortnight, and the patient rapidly gained strength. Another case was that of a woman aged sixty, who entered the hospital with signs of chronic nephritis (*bruit de galop* heart, a large quantity of albumin in the urine, diminished renal permeability). An injection of the serum of the renal vein produced a very notable improvement in all the symptoms and in the general condition of the patient. Here also the albumin disappeared.

The details of the following case were furnished to the speaker by Professor Turbure, of Bucharest·

Nicholas V., aged twenty-seven, entered the hospital with generalized anasarca; the legs were swollen to the abdomen, and the patient complained of frequent micturition, thirst, headache, pains in the back, and tingling sensation in the fingers. The lungs, heart, and liver appeared sound. The urine contained albumin, and was very abundant (five liters). In a few days these symptoms grew much worse, the headache became excessively violent, dyspnea set in, and finally he was seized with tonic convulsions, in spite of the application of repeated wet cupping. Neither the quantity nor the quality of the urine could explain these phenomena. What was wanting was the internal secretion of the kidneys, whose office was to neutralize the toxins accumulated in the organism. This point was remedied by injecting under the skin of the patient three drachms of defibrinated renal venous blood drawn from a strong and healthy dog. A few hours later the patient became calm, and asserted that he felt much better. Four days afterwards the headache returned, but yielded to another injection, and the urine diminished by a third. A few days afterwards the patient insisted on having another injection, and in all six were given with constantly improving results, so that at the end of six weeks he left the hospital cured.

In summarizing the effects of the treatment, M. Lignerolles said that the effects of injections of six drachms showed themselves in general a few hours after injection. The violent headache was the first to disappear, while the nervous troubles, prostration, weakness, melancholy, delirium, gave place rapidly to sometimes exuberant gaiety. The vomiting ceased after one injection, and the oppression or dyspnea was eased in a very short time, while the urine, scanty before the injection, became very abundant under its influence, with consequent removal of the edema.

From all these facts he would conclude that injections of the serum of the renal vein could be employed with success against the uremic complications of nephritis, and could contribute to the improvement of these maladies, as he had several times observed. They furnished to the organism the internal secretion wanting, and allowed the kidney to recommence its normal function of excretion and its antitoxic rôle.

INTRAVENOUS SALINE INJECTION IN SEVERE HEMORRHAGE.

As a result of an experimental research COBB tells us in the *New York Medical Journal* of January 28, 1899, that in using saline injections it is not necessary to take accurately the temperature of the saline solution, if one is in a hurry. [With this we entirely disagree.—ED.]

If the solution feels comfortably warm to the finger no harm will result from its introduction. The temperature should be about 114° F., but if it is 125° F. do not lose time in cooling it. [We think it should be 105°. —ED.]

It is astonishing that no apparent harm resulted from the introduction of saline solution at the extremely high temperature of 130° F. One would naturally believe that such a temperature would coagulate the albumin and seriously damage the red cells.

Saline given with oxygen will save almost hopeless hemorrhage cases.

Do not lose time in getting the solution into the circulation.

It is urged that the solution be introduced into a vein, after a severe hemorrhage, in preference to the slow method of subcutaneous injection.

To furnish as much blood as possible for the purpose of carrying oxygen, bandage tightly the extremities, thus forcing the blood in the capillaries back to the heart. The introduction of small quantities of air into the circulation seems to make no particular difference, for undoubtedly air was introduced into the circulation of all the dogs in these experiments.

All dogs urinated after the pressure had been reinstated by the saline solution. The question of overdistention of the heart must not be ignored by introducing too much saline, for the pulsations become "running" when there is an excess of solution. So far as he could tell, the dogs that recovered urinated more frequently, and passed a greater quantity of water than normal, for thirty-six hours after the operation.

Do not let the patient die while the solution is being sterilized. Be prepared for such emergencies; if not, introduce the solution without sterilization, if the case is urgent. [But only under the skin.—ED.]

If one does not have time to weigh the salt, take a tablespoonful and toss it into two pints of water. [Two teaspoonfuls would be better.—ED.]

It is an easy matter to be prepared for an immediate saline injection, for Parke, Davis & Co. are now preparing sterile normal saline solution, put up in ounce bottles, which, added to the necessary amount of water from the hydrant, kettle, or sterilizer, makes the solution ready for instant use.

From these experiments one is led to believe that in opium poisoning it would be advisable to withdraw five hundred cubic centimeters of blood and introduce five hundred cubic centimeters of saline solution.

In the early stages of pneumonia it seems reasonable to believe that the withdrawal of blood, and replacing it with normal saline solution, would relieve the tension of the pulmonary circulation in the early stages, and would furnish a fluid which would more readily take up oxygen.

The blood count was made with the hematokrit, and the hemoglobin tests were made with von Fleischel's hemometer. The tests, of course, are only approximately correct.

The blood counts and hemoglobin tests showed great variations, probably due to the fact that some of the dogs had been kept in the pound until they were sick.

Saline solution and oxygen in uremic convulsions or threatened eclampsia have already been proved the most efficacious treatment for these terrible complications.

THE EMPLOYMENT OF SALINE SOLUTION.

At the Société de Thérapeutique Professor BOLOGNESI read a paper on the above subject, which was very exhaustive. In referring to the methods employed, he said that artificial serum could be introduced into the organism by four ways—the serous, vascular, subcutaneous, and intestinal.

Intraserous injections were first proposed by Ponfick, who had remarked that the blood effused into the serous membranes was rapidly absorbed. The injections were nearly always made into the peritoneum by means of an incision made above the umbilicus and penetrating to the linea alba; the needle was pushed as in the operation of tapping for ascites. Perforation of the intestine, which many feared, was rare, but the operation was always painful, and followed by distention of the abdomen. As the slightest failure in antiseptic precautions could produce mortal peritonitis, intraperitoneal transfusion was but little practiced.

Intravascular injections were first employed by Hueter, Roux (Lausanne), and Kummel. The vessels chosen were the veins of the bend of the elbow, or the internal saphena vein over the ankle, which passing over the bone is more easy to discover in stout people, and whose caliber is larger than any of those at the bend of the elbow, while the introduction of air at such a distant point from the heart presents but little danger. The quantity of liquid injected varied between one to three liters, with an average of two liters, at a temperature of 86° F. The rapidity of the current should not exceed ten minutes per liter.

Venous injections present certain inconveniences not entirely exempt from danger. Consequently, many practitioners prefer for these reasons the subcutaneous method. For inexperienced hands the venous injection is a regular operation; the veins are frequently difficult to discover; timid operators are afraid of introducing air into the veins; and in any case septic accidents might be provoked, such as phlebitis. Pozzi published

one case of acute edema of the lungs as a consequence of the operation. Further, the counter-indications, cardiac lesions, and weakness of the myocardium in particular, were more frequent. Bosc, of Montpellier, preceded the injection of the serum by drawing off a liter of blood; while Barré invented a rather complicated apparatus to combine these two operations, so that the amount of blood withdrawn was replaced by its exact equivalent of artificial serum; but there was no necessity of being so precise, as the same effect could be produced by ordinary bloodletting and the introduction of the serum subcutaneously.

The subcutaneous method is at present the most frequently employed, and answers every purpose except in urgent cases requiring the intravenous method. The region chosen should be that rich in cellular tissue, such as the axilla, the abdomen, the thigh, or the gluteal region.

The instruments employed to make these injections are numerous, and vary from that of Dumouthier to the simple funnel, but the simplest for all intents and purposes is the ordinary aspirator of Potain, possessed by every practitioner.

The only trouble arising from the subcutaneous method was the pain from the introduction of the needle, which, however, was insignificant, and that produced by the distention of the skin; or, again, the formation of an abscess, but this latter can be avoided with a little care.

Enemata of salt water were known and employed for a very long time, but it is only within the last two years that this method was substituted for the subcutaneous injections. All know the facility and rapidity of rectal and intestinal absorption for medicated solutions, and no one is astonished at the extreme rapidity by which enemata of salt water are absorbed. These enemata strengthen the pulse, render the urine abundant, and suppress thirst. They are used by Eitz with great success for uremia, and by Boulengier for postpartum hemorrhage and for intestinal hemorrhage in typhoid fever.

In affections of the nervous system, Professor Grasset, of Montpellier, advised saline injections in apoplexy with arterial hypotension. They were proposed in contagious affections such as erysipelas, measles, scarlatina, smallpox; while Professor Tommassi, of Palermo, in certain skin diseases derived benefit from them, especially in chronic eczema, and in lichen attended with great itching. His colleague, Barbier, obtained considerable success with the saline injections in infantile cholera, and generally in all the intestinal affections of infants.

Lancereaux published remarkable effects of subcutaneous injections of a saline gelatin solution in cases of aneurisms (gelatin one drachm, saline solution ten ounces). Injected under the skin of the gluteal region, and renewed once or twice a week, ten to twenty injections were generally sufficient to effect a cure.

Among the contraindications of the treatment by saline solutions he would mention heart affections, edema of cardiac origin, dropsies, pulmonary congestive lesions, and renal sclerosis.—*Medical Press and Circular*, March 8, 1899.

ON THE ABSORPTION OF IRON.

The *Boston Medical and Surgical Journal* of March 2, 1899, contains an article by AUSTIN upon this subject. After detailing his research he adds his conclusions, which are as follows:

If the difference between the amount of iron ingested and the amount eliminated represents the amount retained in the body and hence absorbed, then there can be no question from these experiments in regard to the absorption of the iron of the blood when taken either in the form of hemoglobin, as in the meat, or as hematin in the preparation used. This assumption also appears as fully justified as that the amount of nitrogen in albuminous food taken less the amount of nitrogen in the feces and urine represents the amount of the same element taken on by the body in the form of tissue, and this principle has been assumed as proven by all physiologists who have been engaged in experiments on metamorphosis. This also substantiates the views held by Kobert in regard to the absorption of the blood. Considering that the amount of iron retained in the third period from the meat was proportionally as great as in the second, then the amount of iron retained from the .2058 gramme contained in the hematin preparation must have been at least .0152 gramme, or 7.30 per cent —a very small portion, it is true, but it does not indicate necessarily the total amount absorbed. In applying the same calculation to the beagle we would find that out of .0774 gramme in the albuminate at least .0026 gramme, or 3.3 per cent, was retained; hence

we cannot from this say absolutely that iron albuminate is not absorbed, but that the amount retained is only one-half of that in the hematin; of the ferrous sulphate it is quite evident in this experiment that none was retained, and hence probably none absorbed. A brief summary of this work will establish the following points:

1. That iron is constantly being eliminated both in urine and feces during fasting.

2. That apparently raw meat furnishes an available form of iron for absorption under normal conditions.

3. That inorganic iron as represented by ferrous sulphate is non-absorbable.

4. That albuminates and peptonates of iron are absorbable, but to a limited extent.

5. That organic iron, of which hematin and hemoglobin are representatives, furnishes the most easily absorbable and most valuable of all iron preparations.

A NOTE ON THE TREATMENT OF TUBERCULOSIS AT FALKENSTEIN.

The sanatorium is situated at a height of 1300 feet on the southern slope of the Taunus mountains; it faces the southeast, where the ground falls some thousand feet to the valley of the Main, and to Frankfort, and is protected on the three other sides by the higher portions of the Taunus range. The climate is cold in winter, but although there are fogs the atmosphere is singularly free from winds and dust, and there is no perceptible fall of temperature at sunset.

The main building is in plan like a wide horseshoe and encloses a gravel terrace, along which extend covered verandas. In these cane sofas or deck chairs are ranged, and on these the patients spend practically the entire day.

Additional pavilions are placed in the grounds; some of these revolve so that they may be turned to avoid the wind and catch the sun; the Germans have, with somewhat grim humor, christened the pavilions by such names as "The Hall of Sighs," "The Temple of Bacilli," etc.

For the first few days the patients only lie out from after the second breakfast to 5 P.M., but afterwards the day's routine is as follows: After ten minutes' rubbing by the attendants the patients assemble at early breakfast, which in summer is from 7 to 8 and in winter from 7.30 to 8.30; this consists of coffee, rolls, and butter, and in addition hot or cold milk *ad libitum*, the watchful attendant at once replenishing empty glasses. Then the balcony is sought, and the patients lie down, placing their feet in fur bags, and wrapping rugs and shawls about them. The wraps belong to the patients and must be provided as part of their outfit. The most expert of packers then goes round and rapidly and skilfully tucks in the patients, who then appear like symmetrical and well-cared-for mummies.

At ten o'clock they go in for second breakfast, which consists of rolls and butter, and hot or cold milk *ad libitum;* to those who in the opinion of the medical attendant need it, strengthening soup is served. They again lie on the veranda until they go in for dinner at 1 P.M. This and supper are of the kind usually served in German hotels, but special attention is paid to making each course as nourishing as possible, and each meal commences with one of the thick nourishing soups that form a Falkenstein specialty.

At 4 P.M. milk is brought round the veranda; this, as well as the 9 P.M. milk, is not included in the regular tariff, but is served at a cost of one penny per glass.

All the milk used at the sanatorium comes from the dairy of the establishment, which is situated on the hillside above, and is sterilized. For those who cannot digest so much milk kumiss is provided.

The patients are encouraged to drink plenty of milk, and generally take from six to eight tumblers a day, which is a large amount for people who are taking daily four solid meals. Occasionally the amount of milk has been limited, as lately happened to a homesick American who tried to expedite his cure by drinking fifteen glasses a day. Supper is served at 7 P.M., and after it the patients may lie out to 9 or 9.30 P.M. At 9 P.M. milk is served round. The patients then retire to their bedrooms, which are warmed by pipes; the windows, however, are left open during the night.

When the patients arrive they are thoroughly overhauled by the entire medical staff; this is repeated monthly, a daily inspection being made by one of the resident medical men. Their temperatures are taken four times daily — at rising, noon, 4 P.M., night. If the temperature shows fluctuation it is taken eight times daily. It is interesting to see how, when the clock strikes twelve and four, all the recumbent patients pull out their thermometers and place them in their mouths until they are ready to be entered on the charts. These hours are anxious ones to

those with a temperature tending to run above normal, as the penalty for raised temperature is banishment to the bedroom until it again becomes normal.

The sanitation of Falkenstein is excellent; there is an abundant water-supply from pure springs situated higher up the mountains, and the sewage is received in precipitation tanks. The whole place is kept scrupulously clean, and constant war is waged on dust.

Although the sanatorium is surrounded by extensive woods with tempting walks, they are out of bounds for the majority of patients, who are required to rest as much as possible; indeed, even needlework is practically prohibited, and letter-writing is discouraged. It is only when patients are nearly well and about to leave that they are allowed to take walking exercise, and even then the distances allowed are short, and the limits fixed are strictly observed.

It will be seen from the above that rest, air, and food are the three means of cure, and that these are administered with no stinting hand. Complete physical idleness, twelve hours in the open air, the night spent in a room with open windows, and frequent full meals of nutritious foods, with plenty of milk in between, take the place of medicines. It is wonderful how the treatment agrees with the patients, how the long exposure to the fresh air does not cause cold, and how the frequent meals are awaited with sharp-set appetite. Of the benefit of the treatment in the majority of cases there can be no doubt, and that not only in incipient cases, but even when both lungs are affected.—*Medical Press and Circular*, March 8, 1899.

THE RADICAL TREATMENT OF SIMPLE ULCER OF THE STOMACH.

TRICOMI (*Revue de Chirurgie*, Feb. 10, 1899) has operated upon twenty-one cases of simple ulcer of the stomach with but a single death. He holds that the indications for operation are recurrence of ulceration with marked deterioration of general health, resistance to medical treatment followed scrupulously for a long period, intense pain, especially when accompanied by obstinate vomiting, recurrent hematemesis, and evacuating cachexia, gastric dilatation, the formation of a palpable tumor, and the development of an extensive adhesive peritonitis. As an operation of choice, the author prefers gastroenterostomy. This, he holds, is applicable in all cases, no matter what may be the state of the lesion. The loss of resistance incident to this procedure, and consequently the comparatively short period of time during which the food and the gastric juices remain in the stomach, is the probable cause for the cure which takes place. Of the author's twenty-one cases, one died of acute peritonitis in a day and a half; another died after a month from interstitial occlusion. Tricomi contrasts the mortality of some fifty operative cases (ten per cent) with that of the cases treated by medical means exclusively (31.8 per cent), drawing therefrom the conclusion that the operation is one which if practiced early would save about twenty-eight cases in the hundred.

ICHTHYOL IN THE TREATMENT OF ANAL FISSURE.

CONITZER (*Münchener Medicinische Wochenschrift*, No. 3, 1899) holds that ichthyol is particularly serviceable in the treatment of anal fissure. The applications are repeated twice daily at first, cocaine being employed to diminish the pain. The pure preparation is used towards the end of treatment. A cure results in a few days.

THE TREATMENT IN ACUTE OTITIS MEDIA.

JONES (*Liverpool Medico-Chirurgical Journal*, January, 1899) writes upon the subject of acute suppurative otitis and its complications, believing that this affection has been somewhat neglected in favor of the chronic form of disease. The first proposition is that once the wall of a great sinus or the dura has been penetrated, there can be no certainty of a successful issue to operative treatment. With the object of proving this proposition he has recorded seven cases which died in spite of operation. The mortality in complicated mid-ear diseases, even when correctly diagnosed and operated upon, is still high. Even when immediate recovery takes place there is likely to be subsequent alteration of brain function.

The author's second proposition is that while operations for the relief of extradural complications of suppurative otitis—*i.e.*, extradural abscess, commencing phlebitis, mastoid abscess, cervical abscess, etc.—have been invariably successful as far as the complication itself is concerned, these operations, and the radical operations for simple chronic suppurative otitis, have not always resulted in cessation of the discharge, nor in restoration of the hearing power.

Stacke reports, as a result of his radical operation, six per cent of continued discharge and twenty per cent of relapses. Statements such as "completely cured" must be taken with caution unless several years have elapsed since the operation. In spite of the great advance made in recent years in the surgical treatment of chronic suppurative otitis and its complications, the success attained is not such as to excuse any slackening of our efforts in preventing acute cases from becoming chronic.

The author's third proposition is, that with the exception of tubercular cases—and even this is a doubtful exception—all cases of chronic suppurative otitis have once been cases of acute or subacute otitis media, and many of them non-suppurative otitis; and further, that the majority of these cases, by appropriate treatment during the acute stage, might have been prevented from becoming chronic.

Another and stronger reason for directing attention to the acute state is that grave intracranial complications may and often do arise during the acute stage of suppurative otitis. During the first stage of acute otitis media, before the membrana tympani has perforated, the fluid within the ear is serous or serosanguineous and may become absorbed without any further development. The local treatment consists in the application to regions below or in front of the ear of the cold Lieter's coil, and the rendering of the external canal as far as possible aseptic. So long as the pain is not severe and there are no indications of pus formation within the tympanum, paracentesis of the membrana should be deferred. As soon as pus begins to form, the membrane, if not already ruptured, should be punctured, the pus blown out or aspirated, and suitable antiseptic measures resorted to. There is after this operation an immediate improvement in all symptoms, temperature running down, and the symptoms of meningitis, if present, disappearing. These cases are subject to relapse, and should be kept under observation for several weeks. Probably the accessory cavities of the tympanum share in the inflammatory process in the majority of cases. Resolution often takes place. If, however, the attic or antrum becomes cut off from the tympanum, or the contributory cells are cut off from the antrum, so that the inflammatory products do not escape, acute constitutional disturbance will follow, and hence prompt operation is indicated, and the results of this are highly satisfactory. After subsidence of the acute symptoms, if, combined with the free discharge from the ear and the relief of pain, there is tenderness on pressure or tapping on the base or apex of the mastoid; if the apex feels to be slightly prolonged on the affected side; if there is a slight cushiony feel on one side as compared with the other; if there is increased heat; if on rubbing the skin briskly on both sides, one side seems a duskier red; if there is pain or stiffness on moving the head from side to side, with rigidity of the sternomastoid; if several or all of these signs are present, an exploration of the mastoid cells is necessary, and in at least four out of five such cases pus will be found.

The operation required is simple opening of the cells down to the extreme tip, and in some cases the mastoid antrum. The wound should be kept open by iodoform gauze packing until the septic processes have ceased. The discharge generally stops at once, the membrane heals, and the hearing is entirely restored.

Jones advocates opening the antrum in every case in which, the acute stage having passed over, the discharge continues. This he believes would frequently prevent caries of the ossicles and the walls of the tympanum, save the patient infinite discomfort, and likewise avoid the necessity for radical operation in after years.

The etiological importance of postnasal adenoid vegetations, or of permanent perforations of the membrana tympani, in causing relapses or continuous suppuration must not be neglected.

THE OPERATIVE TREATMENT OF TYPHOID PERFORATION OF THE INTESTINE.

PLATT (*The Lancet*, Feb. 25, 1899) notes that on the whole it may be said that the results of operation for the relief of typhoid perforation have improved during recent years. From time to time the published cases have been collected and analyzed by Van Hook, Abbe, Monod, Finney, Gesselewitsch and Wanach, and Keen. Keen in January, 1899, collected eighty-three cases with sixteen recoveries. To his list Platt adds three cases of his own and seventeen published by others, giving a total of 103 cases with twenty-one recoveries. Platt's cases are as follow:

A man aged thirty-seven years was admitted to the Monsall Fever Hospital, Man-

chester, at midnight on November 15, 1898, suffering from an apparently mild attack of enteric fever. The temperature was 102° F.; the tongue was moist and coated, the abdomen was fairly soft, there were a few rose spots, the spleen was a little enlarged to percussion but was not felt, and numerous rhonchi were to be heard on auscultation of the lungs. Widal's test gave a positive reaction. On the next day, at 8 P.M., the patient complained of sharp shooting pains below and to the right of the umbilicus; two hours later the temperature rose to 104.6°. On the 17th, at 11 A.M., the patient vomited once. The abdomen was hard and distended, the tongue was dry, and the bowels were constipated. The pulse was 96 per minute, regular, of good volume, but slightly dicrotic. At 1 P.M. the liver dulness had disappeared and perforation was diagnosed. Twenty-two hours after the onset of the perforation the patient was operated upon. An incision four inches long in the right semilunar line was made. On opening the peritoneum there was an escape of gas, followed by a little feculent fluid; the intestines were greatly distended. It was necessary to eventrate a considerable portion of the small intestine before the perforation could be discovered. The perforation was about a quarter of an inch in length and was situated opposite the mesenteric attachment in a loop of ileum lying near the pelvic brim; its distance from the cæcum was not ascertained. The neighboring coils of intestine were covered by a fair amount of dirty fibrinous lymph. There was evidence of several other ulcers in the intestine. The edges of the perforation were turned inwards and the peritoneal surfaces were united by a continuous silk suture introduced by an ordinary sewing needle. Considerable trouble was experienced in returning the intestines to the abdomen because of their great distention. The eventrated intestines and also the peritoneal cavity were irrigated freely with hot saline solution. A rubber drainage-tube was introduced, passing down towards the pelvis, and the rest of the wound was sutured. The operation lasted fifty minutes. On the 18th and 19th the patient was fairly comfortable. The temperature varied between 98.4° and 99.8°; the discharge from the wound consisted of a little thin, yellow, slightly opalescent serum. On the 20th the abdomen was greatly distended, the tongue was dry, and there was retching and slight sickness. Some relief was obtained from an enema containing turpentine. From this date the patient progressed favorably until December 2, when there was a relapse of the fever, which lasted for three weeks. The drainage-tube was removed November 30 and gauze packing was substituted. The wound was healed on December 26.

The second patient was a male, aged seventeen years, whose illness commenced on October 22, 1898. On November 20, eighteen hours after perforation, an incision four inches long was made in the right semilunar line. There was gas and feces in the abdomen; the intestines were not much distended. The perforation was found at once in a loop of ileum passing from the iliac fossa into the pelvis; it was situated near the pelvic brim. An attempt was made to close the opening by a continuous suture, but the bowel wall was so rotten that some of the loops cut out. With some difficulty the opening was closed by interrupted Lembert sutures, its edges being turned inward. The abdomen was washed out with hot saline solution, a drainage-tube from the wound into the pelvis was inserted, and the rest of the wound was sutured. The operation lasted forty minutes. After the operation the patient was much collapsed, and about half an hour afterward two pints of saline fluid was infused into the median basilic vein. He rallied somewhat for a time, but died at 7.15 P.M. on the same day, eight and a half hours after the completion of the operation. The necropsy showed general peritonitis, six or seven other ulcers in the ileum, and the perforation to be situated nine inches from the cæcum. The sutures were sound and the perforation was healed.

The third patient was a man aged twenty-two years. Illness commenced on November 1, 1898. On November 20, nineteen hours after perforation, an incision four inches long was made in the right semilunar line. There was gas and about a pint of feculent fluid in the abdomen; the intestines were not much distended. The perforation was easily found in a loop of ileum situated near the pelvic brim; its edges were turned inward and interrupted Lembert sutures were applied. The abdomen was well flushed out with warm salt solution, a drainage-tube was inserted into the pelvis, and the rest of the wound was sutured. The operation lasted forty-five minutes. The patient rallied for a time, but then sank, and died on November 22 at 11.50 P.M.

Operation for typhoid perforation of the intestine has already given a gratifying

amount of success. If undertaken within twenty-four hours of the giving way of the bowel a recovery rate of from twenty-five to thirty per cent may confidently be expected, and when it is considered that without operation the condition is almost inevitably fatal, there can no longer be any doubt as to the advisability of the procedure.

MODERN LITHOTOMY.

LOUMEAU (*Annales de la Policlinique de Bordeaux*, March, 1899) apparently on the basis of a single case announces that modern lithotomy implies an elaborate and prolonged crushing, pushed almost to the point of complete pulverization; chloroform anesthesia maintained at the first stage during the period of preliminary washing and crushing, then pushed to the third stage of complete anesthesia during the period of aspiration; rigorous asepsis during the operative act; and finally, postoperative cystoscopic verification as to the complete emptiness of the bladder.

THE TREATMENT OF PAINFUL CYSTITIS.

ALBARRAN (*Annales des Maladies des Organes Génito-Urinaires*, February, 1899), following Guyon, characterizes under the heading of painful cystitis a number of affections of different etiology, characterized by their severity of pain, their chronicity, and their persistence in spite of treatment. Because of increased facilities afforded by modern medicine in the examination of the bladder, these painful cystites (at least a great majority of them) have had additional light thrown upon them.

Cystitis due to foreign bodies or calculus, neoplastic cystitis or tuberculous cystitis, are not included in this classification, although they are extremely painful, are chronic, and resist treatment.

It occasionally happens, for reasons quite unrecognized, that an attack of cystitis acquires an extraordinary intensity and obstinately resists treatment. The cause of this cystitis is often a very ordinary one. It may be gonorrhea, or the passage of the catheter, or a vesical infection secondary to grippe. The ordinary microorganisms are the colon bacilli, staphylococcus, the proteus of Heuser, the streptococcus or gonococcus. One or several of these microbes will be found.

The lesions of these painful cystites are usually deep, attacking the submucous layers or even the musculature of the bladder, often even reaching the perivesical tissues. It is very rare in these chronic painful cases to find the lesion purely superficial. The position of the lesions is especially characteristic, since this is always at or near the neck of the bladder. The lesions observed through the cystoscope are usually those common to severe cystitis. Occasionally vegetating cystitis is noted, or even ulcers or leucoplacia. Sometimes one or more ulcers are found on an apparently almost healthy mucous membrane. Pseudomembrane is by no means uncommon. The diagnosis of the anatomical condition is often extremely difficult. Often it is quite impossible to use the cystoscope.

The most serviceable treatment to begin with is that by instillation, either with silver nitrate or weak bichloride lotion or guaiacol oil. The patient should then be given a warm bath, after which one-half to one drachm of a two-per-cent solution of cocaine should be injected, so that it passes over the trigonum and the neck of the bladder. This is allowed to remain in the bladder for five minutes, after which a lotion of boric acid or antipyrin, at blood heat, is gently injected, when the cystoscope may be used. When this local anesthesia is impossible, because of the intense sensitiveness of the bladder, a general anesthetic should be given. This cystoscopic examination should immediately precede an operation, which is nearly always required. Renal infection very commonly accompanies these cases of painful cystitis, a fact which must be borne in mind in directing treatment.

The instillation with which the conservative treatment always begins should be no larger than thirty drops at the most, and of a one- to a five-per-cent solution of silver nitrate. When the bladder is fairly retentive one-half drachm to a drachm of 1-to-5000 sublimate solution may be used. Silver nitrate is usually the most useful application. Before these instillations the bladder should be entirely emptied; since painful cystitis is usually complicated by some degree of retention the complete emptying is usually accomplished only by means of a catheter.

Usually this local conservative treatment fails, in which case surgical treatment is indicated. Curettage of the bladder is a simple procedure, giving excellent results in some cases. It is most applicable in women, since it can be practiced through the urethra. In men the preliminary perineal operation is necessary. This curettage is especially ser-

viceable when the lesions are limited to the region of the neck of the bladder. It should always be followed by careful after-treatment, and will succeed in uncomplicated cases. Dilatation of the cervical neck is usually unsuccessful. Fistulization of the bladder is one of the most valuable therapeutic resources; the pain ceases promptly, and the deepest lesions get well when the drainage is sufficiently long continued. In woman this fistulization is made into the vagina; in man the opening should be suprapubic. It allows the surgeon at the time of operation to explore the bladder thoroughly, and to curette or apply the thermocautery, in case these remedies are needed. After drainage the bladder should be thoroughly washed and treated, and the opening closed when the inflammation is cured.

PROSTATECTOMY.

SYMS (*Annals of Surgery*, March, 1899) notes that prostatectomy is essentially an operation of modern date, and there are in vogue at present several methods which have proven fairly satisfactory so far; but the operation is still in a process of evolution, and undoubtedly the best possible results have not yet been attained. The principal methods which are at present employed are as follows:

1. Suprapubic prostatectomy without perineal drainage (McGill).

2. Suprapubic postatectomy with perineal drainage (Fuller).

3. Suprapubic prostatectomy, combined with perineal section and drainage (Belfield).

4. Perineal prostatectomy by extensive dissection (Zuckerkandl, von Dittel).

5. Posterior prostatectomy by the sacral route (Rydygier).

6. Perineal prostatectomy, combined with suprapubic cystotomy, without perineal drainage (Nichol).

7. Perineal prostatectomy, combined with suprapubic cystotomy, with perineal drainage (Alexander).

The first three methods, in which the prostate is removed by the suprapubic route, are, in the main, dependent upon the same general principles, but have sufficient variations to mark them as distinct operations. They depend upon opening the bladder suprapubically, then making an incision in the floor of the bladder so as to reach the prostate, and then its removal by enucleation or by morcellation. While these methods have been productive of fairly good results, they are open to certain serious objections, one of the principal of which is the fact that the floor of the bladder is more or less extensively wounded; that the cavity from which the prostate is removed becomes at once part of the bladder pouch, and is thereby a dependent receptacle for urine and exudates, thus rendering infection not only possible, but probable. This objection is not overcome when perineal drainage is resorted to, because the pouch still remains below the level of the tube within the bladder.

Perineal prostatectomy, performed by extensive anatomical dissection, as devised by Zuckerkandl, Dittel, Rydygier, and others, may be excellent from the anatomical standpoint, and is of undoubted use in the treatment of some cases where a very large tumor is present, but it has for its objection the fact that the operation usually is an extensive one, and that it must necessarily be more prolonged than by some other methods, which are serious elements against success in old and enfeebled patients, and also the fact that it does not afford the bladder the advantage of immediate and complete drainage, which is usually essential to the best results.

Perineal prostatectomy, combined with suprapubic cystotomy with perineal drainage, as devised by Alexander, is the best method so far practiced. It is simple of performance, and is dependent upon very proper surgical principles, for the floor of the bladder is not wounded, the perineum is cut in the median line by a single incision, so that the least possible time is consumed and the smallest amount of hemorrhage is encountered. The drainage of the bladder is in the line of gravitation, and the space from which the prostate is removed is not in immediate communication with the bladder cavity, and has perfect and direct drainage, while the urethra is not permanently damaged. In accordance with Alexander's description of this method it is performed as follows:

The patient is prepared for operation by proper emptying of the bowels and by as thorough a cleansing of the bladder as possible. The patient is anesthetized, the bladder emptied, and then distended with borax solution, from eight to ten ounces being sufficient, in most cases, to bring the organ well above the pubes. The rectal bag is not employed. The bladder is exposed by a vertical incision between the recti muscles, and two retraction sutures are introduced through its wall. Between these an opening is made into the bladder large enough to

allow the operator to insert two fingers. The bladder and the projecting portions of the prostate can then be thoroughly examined. With the suprapubic opening properly protected the patient is put in the lithotomy position. A broad, median-grooved staff is passed into the bladder through the urethra, and held by an assistant. The membranous urethra is then opened by a median perineal section, the floor of the urethra being thoroughly cut from just behind the bulb back to the apex of the prostate. The staff is then removed. With two fingers of the left hand passed through the suprapubic opening into the bladder, the prostate is now forced well down into the perineum. With the forefinger of the right hand the surgeon begins enucleation, which is performed entirely through the perineal opening. The fibrous sheath of the prostate, covering its posterior and anterior surfaces, is broken into by the finger, the capsule is entered, and the entire prostate shelled out from within its sheath by digital dissection. The inferior and posterior surfaces of the prostate should first be separated from the capsule. The mucous membrane of the bladder and prostatic urethra covering the enlargement, with the underlying muscular tissue, is stripped up from the part to be removed, but is not opened. The lateral lobes are first removed, after which, if there is a middle enlargement or projecting tumor or tumors, these can be pressed downward into the perineal wound and enucleated in the same manner. During the enucleation an assistant can aid materially by drawing the prostate down into the perineum by means of a proper pair of forceps. After the removal of all prostatic growth the bladder and the perineal wound are cleansed by suitable irrigation. A perineal tube is inserted into the bladder through the opening in the membranous urethra. A rubber drainage-tube of moderate size is placed in the bladder above the pubes. The retraction sutures are removed and the bladder is allowed to drop back behind the pubes. The upper part of the suprapubic wound is then closed by sutures and a dressing of gauze pads applied, which is perforated to permit the drainage-tube to pass.

The perineal wound is dressed as after perineal section. The after-treatment consists in daily washing the bladder, the fluid being injected into the suprapubic tube. The suprapubic tube is removed on the fourth day and the lower tube three days later, after which the bladder is washed by a catheter passed through the perineum. A full-sized sound is passed at the end of the second week, and every five days until the perineal opening closes. Both wounds have usually healed in the course of five weeks.

Syms proposes the following modification of this operation, namely, that a laparotomy should be performed, entering the peritoneum just above the vesical fold, by an incision large enough to permit the operator with one hand to press the enlarged prostate well into the perineum without opening the bladder; the rest of the operation to be performed in the manner already described.

With our present methods this would add but little to the shock of the operation, and, if successful, it would detract very much from the dangers following the operation, for the abdominal wound would, of course, be closed immediately, and the treatment of the case would be but little more than the treatment of any ordinary case of perineal section. The abdominal wound should close primarily, and, being small, should permit the patient to soon be got out of bed.

Irrigation and drainage of the bladder may be satisfactorily and easily accomplished from the perineal opening, and the ultimate convalescence of these patients should be much shorter than when the suprapubic opening exists.

A STUDY IN THE TREATMENT OF ACUTE GONORRHEA.

SWINBURNE (*Journal of Cutaneous and Genito-Urinary Diseases*) states that the treatment pursued is as follows: The anterior urethra is thoroughly flushed out with a hot solution of potassium permanganate (1:4000), the temperature ranging from 110° to 115° F., and in some cases even to 120° F., always flushing it inch by inch by grasping the penis between finger and thumb at each point until the furthest point that can be grasped is reached; then only is the fluid allowed to pass back to the cut-off muscle. If the anterior urethra only is involved, the anterior urethra only is irrigated; then the patient lies on a table, and the urethra is gently filled to distention with a two-per-cent solution of protargol by means of the ordinary urethral syringe. The patient grasps the glans as close to the meatus as possible, holding it for about ten minutes. The meatus is then closed with absorbent cotton and gauze bandage, which is thrown away at the next urination. When a patient is receiving his first irrigation he must be carefully watched and immediately

made to lie down to receive the injection. This is done to avoid as far as possible the faintness which may accompany the first treatment.

If the posterior urethra becomes involved the treatment differs somewhat in the different cases. Those who readily learn to relax the sphincter, allowing the bladder to fill from the meatus, are generally irrigated in this way, emptying the bladder immediately. If they do not readily learn this, after the interior injection with the protargol has been made, a soft-rubber catheter, sterilized, 12 to 16 F., having the eye near the tip, is lubricated with glycerin or lubrichondrin and gently passed down the urethra to a point just entering the posterior urethra, and half an ounce of a two-per-cent solution of protargol is slowly injected through it, which the patient immediately urinates out. In some cases it is important to see that the bladder is empty; then the catheter is passed into the bladder, the urine allowed to flow out, and one-half ounce of the protargol injected into the bladder. Then, as the catheter is gently withdrawn, more of the solution is injected through the catheter during its withdrawal. The passing of the catheter thus into the bladder is only done in certain cases where it is evident that the patient does not completely empty his bladder, and in certain chronic cases, but as a routine treatment in acute posterior urethritis it is to be condemned. An important suggestion at this point is that the catheter should not be used while an inflammatory condition of the anterior urethra exists, unless the symptoms in the posterior urethra are of such a degree as to call for immediate treatment; a few days' wait may prove better as a rule.

A valuable aid in posterior urethritis and in some severe cases of anterior urethritis—in cases, further, where, on account of a hypospadias, irrigation is difficult—has been found to be a pill or capsule containing one or two grains of methylene blue and four grains of boracic acid. A rather serious objection to it is the color of the urine, as it may stain the patient's underwear unless great care is exercised by him. In all these manipulations the utmost gentleness is observed and naturally is of the greatest importance, and minute attention to details is also important. The proper performance of irrigation has to be learned, just as the proper method of passing a sound or any other manipulation upon as sensitive an organ as the human urethra has to be learned. In some cases where the acute stage is advanced and the urethra extensively inflamed, if the patient shrinks from the irrigation it is omitted the first day or so, the protargol (beginning with one per cent) alone being used, and the pill of methylene blue and boracic acid given, warning the patient that it will change the color of his urine. Then after his confidence has been gained, irrigation is also employed. The stronger solutions of permanganate have generally proven of too great discomfort in the majority of cases in private practice, and even 1:4000 is not well borne in the posterior urethra in some very few sensitive cases.

The typical course of a case which has come within forty-eight hours after first noting the discharge is about as follows: The first visit is apt to be in the afternoon. The second, if possible, the next morning at eight, the patient holding in his bladder the urine from over night. The discharge at this second visit is slight, and but few gonococci will be found. The next visit is to be at 6 or 8 P.M., the urine having been held at least three hours. The discharge is very slight, numerous pus cells in the field; often, however, no gonococci are found. Next visit the following morning at eight. Some edema about frenum, but no discomfort. Pus cells will be found and perhaps a few isolated pairs of gonococci. The next visit that evening at six or eight; pus cells, but no gonococci; edema of frenum about the same; discharge thin, inclined to be watery, and very slight. The next visit then is made in twenty-four hours; edema almost disappeared; sometimes there is a slight rustiness, due to a tinge of blood, in the very slight watery discharge; sometimes, after long search, one or two groups of intracellular gonococci may be found, and in favorable cases—in fact, in most of the cases of this group—no gonococci are seen again after this. The patient notes that on getting up in the morning there is rather more discharge than at any other time (this, frequently examined, will be found to contain pus, epithelium, and fibrin). Patient comes once each of the next two days, and this finishes the first week. During the second week he comes every other day. He may continue to have a watery discharge, hardly amounting to more than moisture and composed largely of epithelium, though pus cells may still be present. This diminishes steadily during the week. The third week he may be seen twice; then he should report again in seven days. There is then generally no mois-

ture; the first glass may contain a faint floating mucous shred composed largely of epithelium. He then is tested by drinking beer freely, either for forty-eight hours or during the following week, and then presents for examination. He is then told to live his ordinary life, to avoid coitus, and advised to report in a month, but to report at once if anything goes wrong. At this last visit he is carefully examined, prostate and seminal vesicles being examined also. This usually closes the attack.

Of the cases observed there were 105; of these, thirty-four had disappeared from treatment too soon to form any conclusion, some having received only one treatment and others three or four. In some instances friends have reported that they were all right and did not need any further treatment.

Of the cases coming for a longer period there were seventy-one. Those coming with a first attack were forty-six in number; sixteen came within forty-eight hours of the beginning, twenty between the third and seventh day, ten came after the disease had lasted between ten days and three weeks. It is natural to suppose that there should be some differences noted in these different classes; the difference in the average is slight if three prolonged cases in those coming between the third and seventh day are thrown out.

Of the sixteen cases, the average time for final disappearance of the gonococcus was fourteen days; average length of treatment, twenty-one days; one case failed. Of the twenty cases three were prolonged, two practically becoming chronic; in the remaining seventeen the average number of days before final disappearance of the gonococci was seventeen; average length of treatment, twenty-six days. Of the ten cases, the average time for the gonococcus was eleven days; average length of treatment eighteen days. These figures are of but little value, as many of the cases would disappear for a few days, thinking they were all right, and return with a return of the discharge; others would omit a day now and then for lack of time to come.

THE THERAPEUTIC UTILITY OF ANTI-STREPTOCOCCIC SERUM.

There is yet no unanimity of opinion with regard to the therapeutic utility of antistreptococcic serum. Thus BAUM (*Medicine*, January, 1899), on the basis of his own experience and from an analysis of the literature, reached the conclusion that in cases of pure streptococcus infection the serum undoubtedly exercises a favorable influence on the course of the disease. In cases of mixed infection the influence of the serum has been demonstrated, but further trial of the remedy as an adjunct to other treatment is desirable. Considering the grave character of complications of non-streptococcus origin, all indicated therapeutic measures should be employed in addition to the serum. It may be assumed that the serum exerts a direct bactericidal action upon the streptococci, and not merely a stimulating influence upon phagocytosis. The initial dose should be twenty cubic centimeters, to be followed by ten or fifteen cubic centimeters every twenty-four hours, according to the indications. Mackie (*British Medical Journal*, Jan. 21, 1899) reports four cases of generalized septic infection treated with anti-streptococcic serum. In none did the injection of the serum appear to have the slightest effect, beneficial or otherwise. Two of the cases, however, presented mixed infection with streptococci and staphylococci, and two a pure staphylococcus infection.

THE MECHANICAL TREATMENT OF TUBERCULOSIS OF THE SPINE AND LATERAL CURVATURE.

PHELPS (*Post-Graduate*, March, 1899) states that among the chief causes of lateral rotary curvature are heredity, paralysis of the groups of muscles, a short leg, intra-uterine causes, bad position in sitting or standing of the rapidly growing child, injuries to muscles at the time of birth, which prevents their development, twist of the pelvis, producing rotation, bad nourishment and bad hygienic surroundings, and rachitis.

In the treatment of Pott's disease, the principles are extension to relieve pressure and fixation to prevent the trauma of motion—extension to the point of comfort, and fixation with a dressing comfortable to be worn and impossible for the parent to remove. By extension and fixation is meant extension and fixation all the time, both day and night, in bed and out of bed. In lateral curvature there can be only harm done with a steel brace, because it cannot be anchored at the pelvis to make proper lateral support; and a narrow pad or bar is bound to excoriate from pressure, and the patient will remove it.

The same objection holds good in Pott's disease. The anteroposterior lever of Taylor cannot be worn constantly, and then in

cases of the slightest lateral deviation of the spine, it aggravates the deformity by twisting the spine upon its axis, hence the old statement that "the deformity usually increases at first when the brace is applied."

Apply a well-fitting plaster-of-Paris or aluminum corset, and the deformity will not increase. A steel brace to protect Pott's disease is like the first locomotive, that required a man to open and shut the valves at the right time, or things would not go. The plaster-of-Paris or aluminum corset is like the perfected mogul engine that runs without care after the throttle is open.

The application of a steel brace of any make in Pott's disease of the spine, where there is the least lateral deviation, is a practice to be condemned, because such cases invariably increase in deformity, on account of the mechanical conditions. Destruction of bone will certainly increase, whereas if suspension is applied and a properly fitting corset adjusted, no pressure is made at the point of disease, and the rotation will not increase.

In making a plaster-of-Paris corset for Pott's disease or lateral curvature, place under the gauze shirt a "dinner pad," a folded towel, to make room for distention of the stomach. The "cross-bar crinoline" is objectionable for the bandage material, because it carries too much water and interferes, therefore, with the "setting" of the plaster. The best material is the cheapest of crinoline, which contains little or no sizing. It comes in twelve-yard lengths. Tear this in two, making a piece six yards long. This is to be torn up in strips five inches wide. This furnishes the best foundation for the plaster bandage. Only just so much plaster should be rubbed into the bandage as will be retained by the meshes of the crinoline; the plaster should not lie loosely on the bandage. The success of a corset depends very largely upon the first bandage applied. The patient is suspended slightly by means of the chin- and shoulder-straps. The first two or three turns of the bandage are applied snugly around the lower part of the abdomen at the middle and down on the pelvis. Only about three or four bandages will be required for a patient five years old, commencing at the bottom of the corset with each subsequent bandage. Be sure to rub the layers of bandage well together with the hand, so as to get rid of the air; it is not a heavy but a compact bandage that is required. This is a very simple process, but the success of the plaster-of-Paris corsets depends upon the amount of cerebral matter mixed with them.

It is desired to utilize the principle of anteroposterior pressure when necessary, but not in lateral curvature; it is also desired to hold the patient in the suspended position. Press the corset in over the crest of the ilium to prevent it from slipping. These are the main ideas to be followed out in the application of the plaster-of-Paris corset. Now that the plaster is just setting, the body is seized with both hands on either side, and counter-pressure is made between the vertebræ, placing the weight of the body upon the transverse and articular processes. But it would not do to leave the bandage this way, for it would soon cause excoriation. Remove the "dinner pad," and then press the corset a little anteroposteriorly over the abdomen. In this way the corset is slightly "sprung" away from the anterior superior spinous processes, and excoriation is thus prevented. Of course the corset will need be trimmed off a little at the top and bottom. A sharp knife is the best instrument for cutting away soft plaster-of-Paris corsets. Another important practical point in applying plaster-of-Paris bandages to fractured limbs is that if a plaster bandage while still soft is cut nearly through, and then an ordinary bandage applied, much less difficulty will be found in removing the plaster bandage. The plaster-of-Paris corset is applied over a long stockinet shirt. The lower portion of the shirt can be turned up over the corset, thus giving it a nice finish.

In regard to the treatment of lateral curvature of the spine, the principles involved are entirely different from those of Pott's. In Pott's disease a permanent corset is applied for the purpose of fixation and extension. In lateral curvature the support is applied for the purpose of fixation and extension during the time the individual is in an erect position; it is removed at night, and gymnastics with proper breathing exercises should be done while the patient has on his support, because greater benefits are derived from this method than from removing the support during gymnastics. In lateral curvature of the spine the principle of treatment is extension and fixation to relieve pressure at the point of curve, which prevents the further absorption of bone. Gymnastics, muscular and respiratory, are used for the purpose of strengthening the spinal muscles, increasing the capacity of the thorax, and aiding in forming compen-

satory curves. Nearly all cases of lateral curvature of the spine in which the deviation from the median line is more than one-half of the diameter of the body of the vertebræ should be braced, else absorption of the vertebræ from pressure is bound to go on. Phelps states that he has seen hundreds of these cases treated by the best gymnasts of the Ling method and other methods of gymnastics from the hands of the best orthopedists, and they have almost invariably given a history of increasing deformity. It is for this reason that he urges the profession to brace the class of cases designated with a proper fitting plaster-of-Paris corset or an aluminum corset. The aluminum corset is an ideal spinal support. The wood corset, the author believes, would fill the requirements in all cases, but he found that every form of wood corset would change its shape, as do also the sole-leather, rawhide, felt, celluloid, and paper corsets. The patient will invariably shorten during the warm weather with these dressings, but with a plaster-of-Paris or aluminum corset this shortening will not be observed, and the test of any support is the question of how much taller it makes a patient. An aluminum corset has this to recommend it: it will not change its shape, it is almost indestructible, and when well shellacked the perspiration will not affect it. It is light and perforated, which makes it a very cool corset in the summer-time, being made entirely of metal. Patients with Pott's disease of the spine wearing the aluminum corset are enabled to go in bathing at the seaside during the summer months, which is a very great advantage.

In regard to the operative procedure in lateral curvature of the spine, where very strong bands of muscles are found stretched across the curves, such patients are to be etherized and these muscles divided. Frequently two to six inches is gained by an operation of this kind.

SARCOMA OF THE BRAIN SUCCESSFULLY REMOVED.

CARLE (*Revue de Chirurgie*, Feb. 10, 1899) removed a sarcoma from the left frontal lobe of a patient who suffered from motor aphasia paralysis of the hyperglossal nerve and of the lower branches of the facial, together with marked diminution in the intelligence. Two and a half years after operation the patient was perfectly well, with unchanged intellectuality. The only remaining sign of trouble was slowness of speech.

NON-MALIGNANT ULCERATIONS OF THE ESOPHAGUS, WITH ESPECIAL REFERENCE TO SIMPLE PERFORATING ESOPHAGEAL ULCER.

RUSSELL (*Scottish Medical and Surgical Journal*, April, 1899), after calling attention to the slight notice accorded simple ulceration of the esophagus in English and American text-books, contributes an admirable study of the affection.

Perforating ulcer of the esophagus presents practically the same anatomical features as ulcer of the stomach. If it be small in size, it retains the classical appearance of sharply-cut, shelving edges; if large, the ulcer tends to become annular, surrounding the tube, or sometimes irregular. It may or may not perforate all the coats of the esophageal wall. The condition of the periesophageal tissue seems to depend on the length of duration of the ulcer. In some cases, such as Flower's, the ulcer perforated the aorta before any new fibrous tissue had formed between the tubes. In other cases we read of dense adhesions between the esophagus and neighboring organs.

If cicatrization has taken place, the ulcer is represented by a puckered white radiating cicatrix similar in appearance to healed ulcer of the stomach.

Esophageal ulcer occasionally occurs concomitantly with gastric or duodenal ulcer. In such cases the diagnosis is still more difficult.

The records do not throw much light on the etiology of simple perforating ulcer. Several facts, however, may be gathered from them. The condition differs from gastric ulcer in the following points: (1) Males are much more frequently attacked than females; in twenty-three cases seventeen were males, six females. (2) It is a disease of middle and advanced life. The patients' ages range chiefly from forty to sixty-seven years. In only five cases were the patients under thirty-five. (3) Anemic conditions are not mentioned as concomitants of the disease.

Syphilis and habits of intemperance have been noted in several of the cases, but there is no evidence that either of these is an important etiological factor. In some of the cases the ulcer appears to have caused death in persons who had previously presented no pathological symptom.

The pathology of the condition rests in the same position as that of ulcer of the stomach.

Quincke named his cases *Ulcus esophagi ex digestione*, and believed them to be due to the

action of regurgitated gastric juice. Similarly another writer entitled his paper "Peptic Ulceration of the Esophagus." Debove and Berrez, however, believe that this view of the causation both of gastric and esophageal ulcers is untenable, and hold that the cause is still undiscovered.

It is very apparent from the cases recorded that there is no symptom absolutely pathognomonic of esophageal ulcer. Unfortunately, too, in many instances the condition gives rise to no symptoms, or to symptoms so slight as to be entirely overlooked, until the condition of the patient suddenly passes beyond the power of treatment. Still, in many instances it is quite evident that the patients' lives might have been saved had the cases been diagnosed and proper treatment undertaken.

The first symptoms usually appear to be pain on or after taking food, and vomiting of the matter ingested. The pain in most cases is situated either between the shoulders, behind the sternum, or in the back at the level of the lower dorsal and upper lumbar vertebræ. Pain is also occasionally present in the epigastrium. The pain usually begins as the food is being swallowed; sometimes, however, it is not complained of as occurring so early.

Later on in the disease the course of events is that the patient begins to have difficulty in ingesting food, the food being at once regurgitated from the esophagus as soon as the act of deglutition has taken place. At the same time hematemesis, more or less severe, is a common symptom. Berrez says that the hemorrhage is never so severe as it may be in gastric ulcer, from the fact that the esophageal vessels are so much smaller than those which run on the surface of the stomach. In the cases recorded where hemorrhage has been sudden and fatal, the cause was always perforation into the aorta or one of its branches.

In spite of the apparent obstruction in the esophagus, usually at this stage no actual constriction can be discovered on passing a sound.

The condition may then either begin to progress towards cure, or may cause the death of the patient, the fatal termination being due either to perforation of some important structure or to the debility caused by the hemorrhage and inability to swallow or retain food. Perforation, if it occurs, is most commonly into the air-passages. Perforation of the pericardium, pleura, or one of the great vessels has been reported.

If the ulcer goes on to cicatrization, a severe stricture may be the result, and may cause death of the patient from slow starvation. Thus the patient in the early stages of the disease may suffer from *apparent* stricture, and later require treatment for *actual* stricture, of the esophagus. The cases of Debove are good illustrations of the latter stage of the disease. In each of these cases the patient was evidently not far from a fatal termination when treatment was commenced.

Cancer of the esophagus and ulcer of the stomach are the diseases with which simple esophageal ulcer has been most frequently confounded, and in many of the cases recorded it would have been very difficult to make any other diagnosis.

Hemorrhage from the esophagus may be due to varicose veins. This condition is chiefly seen in cases of cirrhosis of the liver. The possibility of diagnosis between simple perforating ulcer and the other forms of non-malignant ulceration would depend almost entirely upon the presence or absence of a definite history or diathesis, which might lead one to suspect on the one hand the effects of a foreign body or irritant poison in the esophagus, or, on the other, ulceration of a tubercular or syphilitic nature.

In sounding the esophagus one must bear in mind the possibility of being misled as to the presence or absence of stricture, by the sound passing into a diverticulum. Perforation of the air-passages would be indicated by the patient immediately beginning to cough after swallowing food, and later by the development of a septic condition in the lungs.

Treatment must be carried out on general principles. The ulcerated area must be saved from irritation as much as possible by the giving of bland foods, aided by rectal alimentation, and if the condition be obstinate, by the formation of a gastric fistula. If there be any suspicion of syphilis, antisyphilitic remedies should be tried in the first instance.

If a stricture has formed, dilatation should be performed, provided the ulcer appears to be healed, but if hemorrhage is still going on, and there is much pain, it would appear to be wiser to give the esophagus rest for a time before undertaking dilatation. In some cases surgical intervention by way of the posterior mediastinum might be of great

value. After perforation of the air-passages there might still be some hope for the patient in the formation of a gastric fistula, but perforation of the pleura, pericardium, or aorta must almost of necessity prove fatal.

A CONVENIENT TECHNIQUE FOR THE DELIVERY OF THE AFTERCOMING HEAD WHERE GROSS DISPROPORTION EXISTS.

STAHL (*American Journal of Obstetrics*, April, 1899) reports a case of labor delayed by hydrocephalus, in which he decapitated, turned the head, perforated it by means of blunt scissors, evacuated the liquid contents, and delivered without difficulty and without the slightest injury to the mother.

Given one hundred cases presenting the usual malconditions as to pelvocephalic disproportion, the advantages will be found to lie with the perforation and extraction of the advancing head rather than with the perforation and extraction of the aftercoming head, for, however masterful the obstetrician, the following conditions will obtain:

1. The cephalic parts in the aftercoming head are more difficult of access.

2. The avenue of approach, because of its embarrassment, is more awkward for operation than when clear of obstacles like the neck and trunk.

3. The assistance required is greater and more complicated.

4. The length of time of operation is longer.

5. The evacuation and breaking down of the brain is accomplished with less facility.

6. Extraction of the aftercoming perforated head manually or with instruments requires greater and more delicate efforts.

7. The dangers from slipping of instruments, ruptures, lacerations, and pressure inflammations are greater.

8. With the aftercoming head choice of vantage puncture is limited; the head cannot be turned or adapted as emergency or advantage may suggest. In the advancing head, and more especially when decapitated, the head can be turned, without difficulty or danger, into any form of presentation desired, so that any point, as a fontanel or suture, may be chosen for attack.

9. The extraction of the aftercoming head presents more difficulty for the general practitioner, as well as for the specialist, than does the extraction of the advancing head.

10. As Winternitz declared, decapitation, turning, excerebration, and extraction (his case with craniotomy) requires, comparatively speaking, little time.

A short excerpt of Stahl's case is as follows: Parturient, thirty-two years old, well and healthy appearing, had four labors within four years, all with assistance. First labor: Forceps, difficult, at pelvic outlet; neonatus died a few hours postpartum. Second labor: induction of labor at thirty-third week; spontaneous delivery of 2840 gramme child; died one day after. Third labor: prolapse of cord and foot; reposition; spontaneous delivery of premature child; lived. Fourth labor: occipito-posterior presentation; premature; forceps at pelvic outlet; lived. Fifth labor, present case: A generally contracted pelvis with a conjugata diagonalis of 9.9 centimeters; conjugata vera, 7.5 to 7.7 centimeters; position first breech; membranes ruptured at 12 midnight; breech soon appeared; extraction difficult; right arm extracted with fracture; head high above superior strait; notwithstanding strong tractive attempts, did not descend; attempts made to perforate; no room in vagina for perforator; while attempting to perforate a profuse hemorrhage occurred, due to premature separation of placenta; pulse became small, face blanched, the patient threatened to collapse; decapitation, turning, perforation through vertex; hemorrhage still continued; applied cranioclast, soon delivered head; prematurely separated placenta immediately followed head; uterus contracted firmly, hemorrhage ceasing; one hour and a half postpartum, after various stimulation, the patient could safely be committed to the nurse's care; puerperium normal; neonatus 3500 grammes.

Kilian in 1849, Fehling in 1889, both warned against exerting such traction upon the trunk as to separate it from the head. Under normal conditions and under moderate disproportion this suggestion is a very good one. Here, if the head be not spontaneously delivered, manual methods alone usually develop it. But where gross disproportion exists this objection need not stand, as decapitation with perforation, etc., may be performed as readily—more so, no doubt—as perforation, etc., of the aftercoming head with trunk still attached.

Will this method of decapitation and extraction prove as successful when dealing with the normal head as with the hydrocephalic? The author thinks so, and that it should yield as favorable results. If it were necessary the turned, perforated, collapsed,

thus advancing head could readily be disarticulated and extracted with the light, small Meigs or Mesnard forceps, and with less embarrassment than when crushed and spiculated with the heavy machinery of the cephalotribe.

REPORT OF NINE ABDOMINAL SECTIONS FOR EXTRA-UTERINE PREGNANCY.

HIRST (*American Journal of Obstetrics*, April, 1899) last year reported twenty-one operations for extra-uterine pregnancy. He has had since then nine more, making a total experience of thirty operations. These last cases teach no new lessons. There were, however, several interesting cases among the number. Two were apparently only fourteen days advanced, judging from the size of the tumor and the clinical history. One of the specimens showed a swelling of the tube not over half an inch in its longest diameter, and yet the amount of blood in the abdominal cavity in this case was unusually large. In another case, in which the woman had already given birth to twins twice, there was every evidence of a coincident intra-uterine pregnancy, which had not yet been interrupted by the operation. The patient had not menstruated since the operation, and the uterus was steadily enlarging, but it was too early to elicit positive signs of pregnancy. One of the cases had an extraordinary history, and was operated on for a pus tube on one side. The other tube and ovary, carefully inspected during the operation, were dropped back unmolested, as they appeared perfectly healthy. Four and a half weeks later there were symptoms which under any other circumstances would have been recognized as those of tubal pregnancy, but such an idea did not occur to the author. After three or four such seizures in the next five or six days a mass appeared in the pelvis involving what had been the healthy tube and ovary. The supposition was that an infection had traveled up from the uterine cavity; the abdomen was reopened, and a ruptured extra-uterine pregnancy found. The woman must have been impregnated immediately before entering the hospital, and in the first operation a tube with an impregnated ovule in it had been handled, naturally without suspecting it. Of the thirty patients three died, one of cirrhosis of the liver and gastritis, a chronic drunkard, in the Philadelphia Hospital; the other two of acute anemia—they had practically bled to death before the operation was attempted.

HYSTERECTOMY FOR PUERPERAL SEPSIS.

HIRST (*American Journal of Obstetrics*, April, 1899) has averaged for the last few years at least four hysterectomies a year for puerperal sepsis. During the past winter he has had three such operations, and in addition has had a number of other operations for puerperal sepsis. Recently he had a case in which an incision was made over the groin and another in the loin, washing out a quart of pus by through-and-through drainage.

There is no such thing as specific operation for puerperal sepsis. One is occasionally obliged to remove a necrotic or gangrenous uterus, just as he would be obliged to remove a foot of gangrenous intestine. We might as well expect a patient to get well with such a uterus left in the body as to expect her to recover without removing a gangrenous portion of gut. These necrotic uteri have the consistence of cheese. Nothing holds in them. They are perforated easily by the finger-tip. The whole uterus is one vast nest of streptococci, and it would be just as sure to kill a woman, left in her body, as an enormous injection of a virulent culture.

The author has had twelve hysterectomies for puerperal sepsis with one death in the last three years, which is a good illustration of what can be done by operation. One of the cases was brought into the hospital with a temperature of 104°, pulse 140. She was intensely emaciated and had that grayish color of the skin which we see in advanced cases of septicemia. There was a large mass filling up the whole of the pelvis. When the abdomen was opened it was found that the tubes and ovaries were involved, the broad ligament being an inch thicker than normal, and the uterus so soft that it could be pinched through between the thumb and forefinger. Everything was taken out—the tubes, ovaries, and as much of the broad ligament as could be gotten away. The woman made a tedious but good recovery, and is now perfectly well. These cases, of course, need the freest kind of drainage with both gauze and tube.

Another case was one of criminal abortion. The patient came into the Howard Hospital with a rapid pulse and hectic fever. She was operated upon, and the uterus was found perforated in one place. The whole pelvis was full of stinking pus. All the pelvic organs were taken out. She made a good recovery.

In another case the patient had a temperature of 104°, the pulse was 140, and the woman was almost comatose. She seemed to

recognize nobody and only replied to questions asked in a very sharp tone of voice. She was as far gone as any patient in sepsis whom the author has ever seen recover. The abdomen was opened and the uterus and other pelvic organs taken out. The wound was drained with both gauze and tube. The broad ligaments were so thick that no mass ligature could be applied. The bases of the broad ligaments were left open. The whole pelvic cavity was packed with gauze and a large glass tube was placed in Douglas's pouch. This was replaced in forty-eight hours by a rubber tube, through which the pelvic cavity was irrigated daily with sterile water. Within twenty-four hours of the operation the woman's temperature was below 100°, consciousness returned, and her pulse was under 110, and from that moment she had no bad symptoms. A sinus remained for some months, but gradually closed, and she is now perfectly well.

These are types of cases which need hysterectomy, and without that operation they are absolutely doomed. The author thinks this proposition is unassailable.

The woman whose uterus was exhibited, the author stated, was no worse than many he has seen get well. It is the only case that he lost from an operation for puerperal sepsis in the last three years. The uterus had, when it was taken out, the characteristics which have been described. Although the seat of infection was removed and the operation quickly done, the patient died. The result is no argument against the procedure. It is impossible to be successful invariably in such desperate cases. That woman could not have recovered without the operation; it gave her the only chance she had.

GANGRENE FOLLOWING THE APPLICATION OF ORTHOFORM SALVE.

MIODOWSKI (*Münchener Medicinische Wochenschrift*, No. 12, 1899) reports a case of sloughing following the application of five-per-cent orthoform salve. A woman, sixty-eight years old, suffering from an old varicose ulcer of the leg, having been treated by a zinc preparation, complained of violent pain radiating to the knee, and so severe as to interfere with sleep. A five-per-cent orthoform salve was applied to the ulcer, with the result of almost immediately relieving the pain. The patient was able to sleep comfortably. Upon inspecting the wound about a week later, a large slough was found in the position of the ulcer; the latter had extended. In this case (as far as the report of it goes) it is not fair to conclude that the gangrene was due to the orthoform salve. It is noteworthy, however, that the application relieved the severe pain of the inflamed ulcer.

AMYLOFORM AND IODOFORMOGEN AS SUBSTITUTES FOR IODOFORM.

HEDDAEUS (*Münchener Medicinische Wochenschrift*, No. 12, 1899) was asked by Czerny to test these two drugs. The amyloform is a chemical combination of formaldehyde with starch. It is stated by Bongartz to be free from irritating qualities, non-toxic, strongly disinfectant, and with a marked effect in diminishing secretion. This opinion is corroborated by Heddaeus. The drug is not soluble, hence can be used only as a powder. It can be either dusted on the wound or insufflated. A number of illustrative cases are reported, showing the excellent results of the drug. In many tuberculous affections the rapid disinfecting power of the amyloform was clearly proven. In no instance was there any irritant effect, such as ezema, observed. When it was applied to large granulating surfaces there was often felt at first slight burning. No intoxication symptoms were ever developed. It is commended by the author as a thoroughly admirable, efficient, antiseptic dusting powder, which in many cases can substitute iodoform, and which, because of its absolute freedom from irritating properties, is to be preferred to many of the newer antiseptics. Its most important action is the cleansing power it exerts on suppurating wounds, and hence its principal application will be found in the treatment of superficial suppurative affections.

Iodoformogen, a preparation of iodoform and albumin, is a clear yellow powder, insoluble in water, and almost without odor. It contains ten per cent of iodoform, and since it is prone to decompose, forming iodine, it should be kept in dark bottles. Iodoformogen was used in a large number of cases, some of which are reported. It was found to be decidedly antiseptic, markedly lessening the secretion, favoring the formation of granulations, and exerting a specific influence on tuberculous processes. It is ranked as next to iodoform in this respect. The author states it is doubtful whether it will entirely displace iodoform. It is much less toxic than iodoform, and is devoid of the unpleasant odor of this drug.

THE RELATIONS OF A MOVABLE KIDNEY AND APPENDICITIS.

EDEBOHLS (*Medical Record*, March 11, 1899) proves by his clinical and operative work that chronic appendicitis is present in from eighty to ninety per cent of women with symptom-producing movable right kidney. This frequency constitutes chronic appendicitis one of the chief, if not the chief, symptom of movable kidney.

Chronic appendicitis by reason of its frequency, the protracted suffering and serious impairment of health which it entails, and the dangerous possibilities of implanted acute attacks of appendicitis, may be considered the most important complication of movable right kidney.

Twenty per cent of all women have movable kidney or kidneys; four per cent have appendicitis; and while three and one-half per cent have both symptom-producing movable kidney and appendicitis, only one-half per cent have appendicitis and well anchored kidneys. The startling nature and importance of the conclusions to be drawn from these statistics do not invalidate the latter.

Satisfactory investigation of the relations of movable kidney and appendicitis became possible only after the discovery and elaboration of the writer's method of palpation of the vermiform appendix. It remains impossible to those not practically familiar with the method.

Chronic appendicitis may be the only symptom of movable right kidney.

Some of the symptoms commonly ascribed to movable kidney are often in reality due to the concomitant appendicitis.

The relations existing between movable right kidney and chronic appendicitis are those of cause and effect. A movable left kidney never produces appendicitis.

Movable right kidney probably produces chronic appendicitis by indirect pressure upon the superior mesenteric vein, the return circulation of the appendix being hampered by compression of the vein between the head of the pancreas and the spinal column.

Chronic appendicitis associated with movable kidney shows no tendency to resolution or spontaneous cure, with restoration of a normal appendix, while the right kidney remains movable. The only cure possible under these conditions is by slow progress to appendicitis obliterans.

In twelve of the writer's cases of coexisting movable right kidney and appendicitis, the appendicitis apparently ended in resolution and remained permanently cured after right or bilateral nephropexy, without any attention to the appendix.

Recovery from appendicitis after right nephropexy may only be expected in cases in which the associated chronic appendicitis is of comparatively recent origin.

In a minority of cases only of associated movable right kidney and chronic appendicitis will either nephropexy alone or appendectomy alone meet all the indications. The majority of patients require both operations to restore them to full health. Both operations, right nephropexy and appendectomy, may be simultaneously performed through one lumbar incision extending along the outer margin of the erector spinæ muscle from the twelfth rib to the crest of the ilium.

Correspondence.

LONDON LETTER.

BY RAYMOND CRAWFURD, M.A., M.D. OXON., M.R.C.P. LOND.

Since my last letter the election of President of the College of Physicians has come and gone. Somewhat to the surprise, but none the less to the satisfaction, of the faculty, Dr. Church, senior physician of St. Bartholomew's Hospital, has been elected; his most serious opponent was Sir William Broadbent, but the College has probably done wisely in selecting the candidate who has the greater amount of leisure available for its affairs.

It is gratifying news to learn from official returns that the "conscientious objector" to vaccination has not after all proved to be the danger that was anticipated. As a matter of fact it is now beyond question that with house to house visitation and the general employment of glycerinated calf-lymph, vaccination is decidedly on the increase. Under these circumstances the Antivaccination League must in the nature of things redouble, and have indeed already redoubled, their efforts to propagate their vain doctrine. Meantime the Jenner Society has urged upon the President of the Local Government Board the desirability of giving effect to two very practical proposals: first, that the certificate of successful primary vaccination should in all cases record "the number of separate scarified areas, punctures, or groups of punctures made, and the number of separate normal vaccine vesicles which have been produced," and should be registered and kept as

a permanent record; secondly, that the certificate should bear on its face some statement of what in the opinion of the Local Government Board constitutes "efficient," as distinguished from "successful," vaccination, so that parents or guardians who refuse to have their children vaccinated according to the standard so prescribed may at least be informed of the responsibility they incur in so doing.

At the Clinical Society on April 1 modern surgery was very much *en fête*. The President related a case of aneurism of the abdominal aorta successfully treated by the introduction of silver wire. Although this operation has been several times attempted, the number of successful cases is, I believe, extremely small. In this case the attempt seemed to be justified by the position of the aneurism at the commencement of the abdominal aorta, which seemed to preclude other less hazardous methods of interference. The sac was first punctured by a trocar and cannula, and not much blood issued when the trocar was withdrawn; five feet of silver wire was then introduced through the cannula. The puncture was obliterated by means of a silk ligature. It is now a year since the operation, and the large aneurismal sac has shrunk into a small hard knot in the middle line. All the diagnostic signs of aneurism have disappeared, and the patient's symptoms are completely relieved.

At the same meeting Rutherford Morison, of Newcastle, showed a remarkable series of cases illustrating the result of operations for pyloric obstruction. A case of pyloroplasty shown was one of nineteen cases in which Morison had operated successfully for relief of simple stricture of the pylorus. The incision was made 1¼ inches from the pylorus, and a guide passed through it; then an incision was made through all the coats, and so sutured as to make the line of union transverse to the incision. The five remaining cases were patients for whom pylorectomy had been performed for malignant disease. Looking at the patients it was difficult to believe that each was without some portion of the stomach, up to as much as one-half of the organ. The dyspeptic might well ask why Nature has cursed him with this malevolent and useless organ. There was no room to doubt the character of the disease with which the operator had had to deal, as both the portions removed and microscopic sections of them were laid before the audience. In these cases Morison had obtained end-to-end anastomosis of the stomach and duodenum instead of closing the cut ends of both organs and making an overlapping anastomosis. The uniform and almost invariable success of the operation in the cases in which Morison had performed it more than compensated for the fact that the operation was in no sense a new one.

A year or two ago Dr. Washbourn recorded in the *British Medical Journal* some interesting and satisfactory experiments with an antipneumococcic serum he had prepared, and recounted also two cases of pneumonia in which the serum appeared to have been employed with marked benefit. Since this Dr. Pane, of Naples, has prepared an antipneumococcic serum in large quantities, and Washbourn has recently experimented with this. Pane's sera are of two strengths, and Washbourn has shown that the stronger of these two standardized sera has practically the same protective influence against cultures of the pneumococcus as his own serum had. These results justify us in looking for an extended therapeutic application of antipneumococcic sera in various affections of pneumococcal origin.

An interesting communication was read by Dr. Maguire to the Medical Society of London on "Death from Functional Nervous Disease." The cases he seeks to include in this category are those in which the only system at fault appears to be the highest nervous centers, and that without a trace of organic disease. Thus senile decay falls outside the category, as here almost without exception one can point to deterioration of some one or other somatic function, usually that of the heart. In the cases recorded by Maguire death was in each case preceded by a period of unconsciousness of greater or less length, and the most careful examination failed to exhibit disease of any organ, or the existence of any toxemia. In some of the cases there was positive evidence of severe mental strain preceding the symptoms. Dr. Maguire attributed death in these cases to exhaustion of gray matter. The likelihood of this explanation is confirmed by the analogy of the protracted periods of unconsciousness which not infrequently follow the epileptiform seizures in general paralysis of the insane, where the higher nervous centers fail from organic disease. If Dr. Maguire's speculations be correct, it behooves every physician to foster in his patient the spirit of hopefulness. Thus the sense of impending death is of little importance in the young and

acutely ill, so long as the recuperative powers are active, but of grave ill omen in the old and in those enfeebled by protracted disease.

At the Royal Academy of Medicine in Ireland a paper was read dealing with the effects of minute quantities of sodium chloride on the secretion of urine. Solutions of sodium chloride of less than one-per-cent strength were injected into the external saphenous vein of dogs in quantities varying from thirty to fifty cubic centimeters. Urine was collected from both ureters by means of cannulæ both before and after the injection of the salt solutions. The results showed: (1) A marked increase in the amount of urine secreted, which reached its maximum in the second hour after the injection, but had not wholly subsided even at the end of four hours. This increase far exceeded the amount of fluid injected. After making allowance for this quantity, the average of ten experiments showed an increased output of over 300 per cent. (2) Both the total nitrogen and the urea also suffered an increase, though the urine secreted was more dilute. The increased output of solids reached its maximum in the hour immediately following the injection. These effects were not due to dilution of the blood nor to a hydremic plethora caused by the injection, nor could they be ascribed to the necessity of getting rid of the sodium chloride, as in many cases the actual output of chlorides was diminished.

The medical officers of health by the mouth of Dr. Hill have brought a grave indictment against the provision merchants of the metropolis. Most of the articles of food in daily consumption appear to be contaminated to an alarming degree with antiseptics. Milk, butter, and cream appear to be habitually deluged with boric and salicylic acids; so also sausages, hams, tongues, and the various tinned meats. On the whole we prefer to have our milk and butter free from decomposition even at the expense of a few grains of boric acid, but to find that some samples of butter contain as much as eighty-four grains to the pound gives one pause. There can be no doubt that the habitual ingestion of boric acid, particularly in infants, provokes various catarrhal ailments, while salicylic acid must be admitted to be an actively dangerous drug. The medical officers of health call on us to rise against this wholesale system of adulteration, as other countries have done. Let us not, however, follow the example of France, where adulteration is strictly prohibited except in the case of exports, which are adulterated to a degree unknown even in this country. In the course of the discussion Mr. Carsal, a public analyst, stated that he always took up the position in a court of law that "if a substance were present in quantity sufficient to exert an antiseptic action it must *de facto* inhibit digestion, and therefore it must if of any use be harmful." As the propounder of this contentious thesis Mr. Carsal is to be congratulated on the fact that medical men—and in particular specialists in diseases of the stomach—are exempted from serving on juries. The reasonable position seems to be not to forbid the use of preservatives, but to insist on a clear declaration of the nature and amount of the preservative employed.

Experiments in the treatment of Malta fever at Netley Hospital with the serum antitoxin have so far given satisfactory results. The treatment must needs be carried on at present in the face of considerable difficulties, as it cannot be said that as yet we are clear as to what Malta fever is, or rather what is not Malta fever. One finds all the various fevers of the Mediterranean seaboard roughly drafted into this category, but research has shown that these include several distinct varieties; even cases of typhoid fever and malaria are now and again dubbed Malta fever. Apparently we are clear as to the identity of the organism, and with that ascertained beyond dispute we should be well on the way to elaborating an effectual antitoxin. Every physician will admit that the therapeutic armory contains no drug of any peculiar benefit in the treatment of a case of Malta fever.

Liverpool has shown the way to London in the establishment of a School of Tropical Medicine. London it is true is not far behind, thanks to the energy of the Colonial Secretary. Last week the inaugural ceremony in connection with the Liverpool school was held amid great enthusiasm. The clinic of tropical diseases at the Royal Southern Hospital is even superior to that of the Seamen's Society in London, and with the admirable Thompson-Yates laboratories for research, and with Major Ross at the head of affairs, the school starts its existence under the happiest auspices.

Special attention is due to the report in the last number of *Brain* of the discussion at the Neurological Society on the localization of intracranial tumors. The discussion served to show the many doubts and difficulties in the matter of accurate localization,

more particularly in the silent areas of the brain. It was abundantly evidenced that the site of the headache in cases of frontal and cerebellar tumors was subject to the widest variation, and could not be relied upon in localizing, but that in the presence of other signs of a cerebellar tumor, headache referred to one or other side of the frontal region usually indicated a tumor on the opposite side of the cerebellum. Optic neuritis tends to be rapidly developed, and of highest intensity in tumors of the posterior fossa; if the neuritis be unilateral, or more intense on one side than on the other, the side of greater intensity is usually that of the lesions.

PARIS LETTER.

By A. R. Turner, M.D. (Paris).

A recent operation performed by Dr. Doléris, accoucheur-gynecologist of the Paris hospitals, and accoucheur of the Boucicault Hospital, tends to show that appendicitis may exist without causing any very serious symptoms. A patient, aged forty, was operated upon, and a fibromatous uterus, containing a small portion showing signs of mortification, was removed. The second day after the operation slight indications of peritonitis became apparent, and on the sixth day the patient died. On examination the appendix was found to be perforated, showing a fistula in a very much thickened wall, and a certain amount of thick pus was discovered behind the cæcum. On examining the written report of the case it was seen that the patient said she had suffered from severe colic five months before. This case of appendicitis had developed after the operation, without giving rise to any very accurate symptoms, with the exception of a slight degree of tympanites in the lower abdominal region. The operation had been performed *per vaginam*, and in the post-mortem examination no signs of pus or any abnormal conditions were to be found in the vaginal incision.

Dr. Grillot, assistant of Dr. Letulle, chief physician of the Boucicault Hospital, presented recently to the Society of Anatomy, at a meeting held on April 28, the report of a case which died ten minutes after having been received at the hospital, death being due to a ruptured varicose vein of the external malleolar region of the left leg. Dr. Letulle, who is with Cornil, the most noted pathologist in France, examined the case histologically and found union of the skin and of the varicose vein on a level with the ulceration. This observation shows that though infrequent, hemorrhage from such causes may result fatally.

A question of some importance is whether salicylate of sodium has a preventive action on the occurrence of pericarditis in an attack of acute rheumatism. Dr. Delearde, professor at the Faculty of Medicine of Lille, stated recently in an article on this subject that he thought it the best means of preventing such manifestations. A certain number of rules should, however, be followed out. The first is to prescribe this drug in large doses from the very beginning of the illness. In the adult six to eight grammes should be given daily at first; for the child, fifty centigrammes to a gramme under one year, two grammes from two to five, three grammes towards six years, three to four grammes between six and ten, four to five above that age. Such doses should be given in fractional amounts every three to four hours, as this salt is readily eliminated—for an adult, say a gramme every three or four hours. A third rule is to continue the salicylate at half the above doses for about ten days following the disappearance of the articular pains. This precept comprises all the preventive treatment of rheumatic pericarditis, as this affection does not show itself at the beginning of the attack but later on, and sometimes when the pain has quite disappeared. The best formula according to the author is the following:

> Salicylate of sodium, 6 grammes;
> Cognac, 10 grammes;
> Syrup, 40 grammes;
> Water, q. s. ad 150 grammes.

To be taken in large spoonful doses in twenty-four hours.

Recently quite a fright was produced in Paris by a report having been spread that an epidemic of bubonic plague had broken out in a large establishment of dry goods, well known to our readers under the name of the Bon Marché. It seems an anonymous letter had been sent to the *préfet de police*, in which it was stated that five employees of the Bon Marché, whose duty it was to examine oriental carpets, had died from this disease. This news was quite false, and the condition of health amongst the Bon Marché employees has been excellent. It is hard to say whether jealousy was the cause of this alarm; however, one can readily understand that such a report would be apt to injure the sales for at least three or four days.

Dr. E. Perrier, of Paris, has indicated recently a new treatment for the cephalalgia of adolescents:

1. When the pain comes on give from one to three of the following capsules every half-hour: Hypnal, 0.20 to 0.40 centigramme.

2. Every morning a glycerophosphate preparation.

3. Before each meal give in a small glass of malt extract eight to twelve drops of the following mixture:

Tincture of nux vomica, 2 grammes;
Tincture of badian,
Tincture of gentian, āā 0.50 gramme.

4. The food taken should be rich in phosphates: phosphated milk, lentils, beans, good bread, eggs, brains, fish, meats, etc.

5. Stop all mental work and send the child to some elevated country, eight hundred meters above the sea level.

Dr. Ch. Leredde, chief of the laboratory at the St. Louis Hospital, has recently published an article on the treatment of eczema by nitrate of silver. This method has already been used by Dr. Besnier, of the St. Louis Hospital, in the treatment of old circumscribed lichenoid forms of eczema. The author has sought to apply this treatment to extended varieties of eczema, especially when eczema of the hands is present. The mode of application depends somewhat on the stage of the eczema. One point is to use the various methods indicated in the internal treatment, such as cathartics, milk diet, alkalines. Another is to let acute forms which are progressing arrive at their final stage, so long as the cutaneous edema is on the increase. All sources of irritation should be suppressed as much as possible. Once the eczema is fully come out a thin sheet of rubber should be applied on the skin previously sterilized by compresses of boiled water. Four times a day the rubber is taken off and washed with boric acid water. The skin is washed with boiled water. In this manner all infection is obviated, and in case there is the slightest trace of suppuration, the rubber should be removed and compresses applied. Under the influence of the rubber the eczema perspires freely, and twenty-four hours after the application a solution of nitrate of silver 1:40 is applied. This solution is allowed to dry on the surface of the skin, and the rubber is replaced. The following day a 1:30 solution is used, and after two or three days the physician is able to use a 1:15 solution. Generally no inflammatory reaction is perceptible, and in such cases a day may be skipped, and the inflammation goes down. If at the end of this treatment the skin is slightly retracted, the use of oxide of zinc ointment is sufficient to relieve this condition. The author adds that he knows of no treatment which is so apt to produce rapid and beneficial results.

When the acute period is over and the edema is disappearing, the treatment is to be modified to a certain extent, and as an example the author cited what should be the best treatment in a case of eczema of the hands. Complete asepsis is a *sine qua non* and should be obtained by applications of compresses with boiled water, or rather water charged with boric acid or bicarbonate of soda in five-per-cent doses. In two or three days the asepsis is complete, and even if there are any traces left of boils, for instance, the eczematous surface may be cauterized with the exception of the afflicted part. Cauterization is then made with a saturated solution of nitrate of silver, and immediately after a small crayon of pure zinc is passed over the surface. A black precipitate of silver is thus produced. The surface dries very rapidly and remains black three or four days. A second cauterization is made after three days, a third the sixth day. So far the author's experience has not shown him any untoward results. Between two applications some heavy ointment is applied, such as:

Vaselin, 10 grammes;
Oxide of zinc, 5 grammes;
Talc, 5 grammes.

Or,

Vaselin, 10 grammes;
Dermatol, 6 grammes.

Amelioration is very rapid, but a thing to be noted is that on no account should the patient wash his hands; he can cleanse them with bread or with almond paste. After a time the epidermis comes back to its original condition, but there remains a certain thickening which cannot be removed by the use of nitrate of silver. In such cases the application of a salicylic ointment is useful; for instance:

Lanolin,
Vaselin, āā 6 grammes;
Oxide of zinc, 3 grammes;
Salicylic acid, 60 centigrammes.

Or,

Glycerite of starch, 20 grammes;
Oil of cade, 2 grammes;
Oil of white birch, 1 gramme;
Extract of quillaia, q. s.;
Juniper extract, 5 drops;
Vanillin, 3 centigrammes.

The latter preparation is rather disagreeable on account of its odor.

ROME LETTER.

By J. J. Eyre, M.D.

The Health of the Pope—Partial Resection of the Abdominal Sympathetic, Performed by Professor Ruggi, of Modena—Hyposulphite of Sodium and of Mercury for Hypodermic Injections in Syphilis.

The late illness of the pope has given rise to so much interest throughout the world, and to so many false statements as to his condition at the time of the operation and subsequently, that the following account obtained from the very best sources may not be devoid of interest for the readers of the Therapeutic Gazette. On February 21, Leo XIII., who completed his eighty-ninth year on March 2 ult., was taken ill with general malaise, rise of temperature, and severe pain in a cyst which had existed in the left flank, immediately above the crest of the ilium, for upwards of twenty-five years without causing much, if any, inconvenience. The holy father's physician, Professor Lapponi, on his visit the following morning, found that his august patient was suffering from inflammation of the cyst, and he requested a consultation with Professor Mazzoni, *libero docente* of special pathology in the University of Rome, and nephew of the late Professor Mazzoni, the predecessor of Professor Durante in the chair of surgery of the same university. The result of the consultation was that Mazzoni enucleated the cyst on the morning of March 1, having previously anesthetized the part with the ether spray and the subcutaneous injection of cocaine. This method of local anesthesia was adopted because it was not considered advisable to administer chloroform to the pope owing to his great age. Leo XIII. bore the operation admirably, and in the evening the temperature had fallen to 99.5° F., from 102° F. in the morning; the pulse was good, and the general condition satisfactory. Professor Mazzoni has told me that the cyst was hematic, of the size of a large citron or of a fetal head at term; it was not suppurating. After the extirpation Mazzoni plugged the cavity and brought the edges of the skin wound together with strips of plaster, as the doctors thought that the introduction of stitches would be too painful. The following day the tampon was removed and the edges brought together with plaster. Since then the pope has made an uninterrupted recovery. For about a month after the operation he naturally suffered from some weakness, due to the loss of blood and the effects of the operation, but on April 16 his holiness was so well that he was able to be present in St. Peter's at the mass celebrated in commemoration of the twenty-first anniversary of his coronation, notwithstanding that the Rome correspondent of some of the English papers had stated a few days before that he was in a hopeless condition! Leo XIII. bore the fatigue and excitement wonderfully well, which is somewhat surprising considering his great age, his apparently very fragile and pallid appearance, which is habitual, and the extraordinary enthusiasm displayed by the 50,000 people present when the pope entered and left the Basilica.

At the last meeting of the Medico-Chirurgical Society of Bologna Dr. Nasi read a paper on "Partial Resection of the Abdominal Sympathetic, Performed by Professor Ruggi in the Surgical Clinic of Bologna." The reader stated that Professor Albertotti had already communicated to the Society that Ruggi had performed several sympathectomies of the neck for the treatment of glaucoma. These, to the number of six, had been performed in the ophthalmic clinic of Albertotti. Ruggi, having observed how just was the observation already made that the glaucomatous sufferers experienced immediate relief from their sufferings with resection of the sympathetic in the neck, thought of attempting a similar operation for cases of abdominal neuralgia rebellious to the ordinary methods of treatment. On February 23 Ruggi performed resection of the abdominal sympathetic in a woman who for a long time had suffered from a very acute pain in the left flank, which was associated with a feeling of heat and a trembling of the whole of the left half of the body. These phenomena having increased, the patient was admitted to the Clinica Chirurgica in December, 1898, where it was found that she was suffering from right ovaritis and left salpingo-ovaritis, and Ruggi performed left salpingo-oophorectomy and right oophorectomy. After the operation the patient was better, but in February she came again to the clinic, as the pain had returned as severely as at first.

The second patient operated upon with resection of the abdominal sympathetic had been formerly treated by other surgeons with scraping of the uterine cavity and amputation of the neck, and in the surgical clinic had been subjected to bilateral ovarian resection and shortening of the round ligaments

with Ruggi's method, because she suffered from double ovaritis with marked retroflexion. But the suffering that this patient also endured from continuous pain over the whole abdomen, and radiating to the lower limbs and to the right upper limb, obliged her to return to the clinic, where she had undergone vaginal hysterectomy on January 4 for extremely painful chronic metritis. This operation, however, did not relieve the patient, and on March 6 resection of the abdominal sympathetic was performed.

Professor Ruggi performs this operation in the following manner: The patient is placed in Trendelenburg's position; the abdomen is opened from the pubes to the umbilicus, and even beyond if the patient be very fat. The intestines being displaced upwards, the pelvis is easily dominated; the operator notes what is found there, and having observed nothing abnormal, he proceeds directly to the resection of the nerve branches. The surgeon being on the left, he generally commences from this side the quest of the nervous bundle of the sympathetic which forms the so-called spermatic plexus, that comes from the renal plexus and in part from the aortic plexus; it accompanies the spermatic artery and is distributed on each side in the male to the testicle and the epididymis, in the female to the ovary and the superior part of the uterus. With this scope, then, the operator divides the peritoneum opposite the spermatic artery and the pampiniform plexus, and having isolated the neurovascular bundle, which is very easily detached from the underlying parts, he passes under it a gauze band of the breadth of two fingers, capable of raising it and keeping it well distended. By this means the spermatic artery can be uncovered with care, and in Ruggi's cases it was isolated, ligatured above, and divided, while the remainder of the neurovascular bundle, formed of the inferior portion of the artery, the vein, the nerves, and the lymphatics, was ligatured below and partially extirpated. Having thus interrupted the vessel communications above and below, the operator can be certain of avoiding both arterial and venous hemorrhage, and he also has the certainty of having divided all the nerves which accompany those vessels, without constricting them above with a ligature that might irritate them with its necessary constriction.

Both patients thus operated upon—the first after twenty-two days, the second after eleven days—had an excellent postoperative course, and were completely free of the sufferings by which they had been for so long a time tormented.

Dr. Miceli, of Messina, after many researches directed to the scope of obtaining a preparation of mercury very soluble in water, of ready efficacy, and which would not provoke either pain or induration in the parts where it has to be injected, has succeeded in preparing his antisyphilitic hypodermic solution, which he says fully responds to the above requirements. Miceli's preparation is a new salt (double hyposulphite of sodium and of mercury), in the form of a solution in distilled and sterile water. The liquid is without color or odor; each cubic centimeter contains one centigramme of the salt, equivalent to about nine milligrammes of metallic mercury. The solubility of this salt exceeds that of all other salts of mercury—in fact, it has a solubility of 50.4 per cent, and does not produce mercurial stomatitis. Thus in fifteen cases treated by the author it never appeared, excepting in a patient who had had twenty-five injections in as many days. The hypodermic solution never produces indurations, is more ready in its efficacy than the other preparations of mercury, and owing to the hyposulphite of sodium it contains (whose antisyphilitic virtue has been extolled by many authors, including Sullien and Radcliffe) is also reconstituent; indeed, the patients subjected to this treatment increased in weight. Miceli's solution is carefully prepared under his immediate surveillance, and is put up in bottles, each sufficient for twelve injections. It is used with the rules which regulate the injections of other mercurial preparations.

QUININE IN MALARIA.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: This communication is for practitioners, and deals not with theoretical knowledge; it is only a clinical note, chiefly from bedside experience.

Natchez is on a bluff overlooking the lowlands of Louisiana, and from her swamps and bayous we draw our greater share of cases of typical malaria, and all cases of hematuria.

In the simple intermittent fever quinine is undoubtedly a specific; but when cured, and no change is made in the environments—as with the cotton planter of the lowlands on both sides of the river—reinfection is certain to take place, and in these cases quinine, in usual doses, is extremely dangerous. All

cases of hematuria of malarial origin occurring under my observation (in whites) have been due to reinfection and followed the protracted use of quinine. One or two grains dissolved in half a drachm of dilute phosphoric acid is of benefit in preventing a second invasion, and is a tonic of superb power. I use something like the following:

℞ Quininæ sulphatis, ℥ ij;
Tinctura ferri chloridi, ℥ j;
Acidi phosphorici dil., ℥ iv;
Spiritus frumenti, q. s. ad ℥ viij;

M. S.: Teaspoonful in one-third glass of water at meals.

Now as to the treatment of hematuria, when found. I use ergot in half-drachm doses every three or four hours,* and strychnine hypodermically in full doses. I flush the bowels with the hyposulphite of sodium, and I have found an emulsion of turpentine of service in some cases. If the patient is restless and fretful, an enema of sixty grains of potassium bromide is of unquestioned utility. The patient is always anxious, and his mind is very quick. To allay his anxiety and keep his spirits up is a task for us to perform; but it must be done, and a stimulant is a great aid. For this panapeptone will be found useful. When the urine clears up and fever and weakness disappear, strychnine and arsenic should be given as a tonic, and elixir of calisaya or tinctura cinchona compositus at meals as an appetizer. Above all, change the location of the patient.

I have treated eight cases thus, or about as indicated, with no deaths. Three of the cases were caused from catching fish from shallow mud-holes—ponds. The persons would wade out in the pond and spear the fish. These ponds are common in flat countries after an overflow, and as they gradually get smaller, towards the last they literally swarm with a fish of the "sucker" variety. These, half-cooked, are almost certain to produce a variety of ailments, and among them hematuria, in which we also find epistaxis, hematemesis, and occasionally hemorrhage from the rectum—in fact, a general tendency toward hemorrhage.

The other manifestations of malarial infection in which quinine is contraindicated are as follows: (*a*) Fever without well defined rigor; (*b*) fever of slow invasion and increasing (or typhoid) temperature; (*c*) fever of no defined intermission; (*d*) a dried and concave tongue; (*e*) a thick, purplish tongue; (*f*) a tongue with narrow strips of coating on each edge, and angry center; (*g*) a tongue with a narrow strip of coating in center, and thick, dark-red, almost strawberry, edge; (*h*) slow pulse. This last is a sign of profound infection.

The worst case of malarial fever I ever saw recover was a child ten years old. The family was wealthy, and every attention was given. His case was of the continued type. The afternoon temperature for seven days ran above 105⅜°; the morning temperature was generally 103⅕° to 104°. The pulse ranged from 92 to 108.

The so-called typhomalarial fever is a malarial fever in which quinine is entirely useless, save in small doses as a tonic. It is typhoid *only* in range of temperature. Not another symptom of typical typhoid fever is found, and the cases rarely extend over ten, twelve, or fifteen days. Rare cases are found lasting weeks, with small rise of temperature daily. The patient frequently spends only an hour or two in bed, and eats what he likes. I have seen only two cases, but both recovered.

As to infection of malaria. In the delta country (Yazoo—Mississippi River) it is dangerous to go out after dark on account of a damp fog that is seen lying along low places. I am also firmly persuaded that mosquitoes are carriers of infection.

The experience of the most successful doctors in this country is against the use of quinine in hematuria. All say that with it, used freely, almost all cases die, but without it nearly all recover. The "swamp doctors" are a unit in this, and their success certainly shakes our confidence in the quinine treatment.

In conclusion I will say that I have never seen a case of intermittent fever that would not yield to an acid solution of quinine, if a cathartic is used to begin treatment. For this I use:

℞ Hydrargyri chloridi mite, grs. x;
Podophyllin and ipecac, of each, gr. j;
Extracti nucis vomicæ, gr. ss;
Extracti hyoscyami, grs. iv;
Sodii bicarbonatis, grs. xij.

Ft. capsule No. vj. Sig.: One hourly till two are taken, and repeat every third day.

Experientia docet. We do *not* use quinine in the hemorrhagic forms of malarial fever, and are now successful, whereas we were failures with quinine.

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Chief Health Officer.

Natchez, Miss.

*I notice Professor Da Costa also commends its use in malaria. *Vide Medical News.*